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OF THE

ENGLISH LANGUAGE

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GEORGE EDWIN RINES

ASSISTED BY MORE THAN FIVE HUNDRED OF THE MOST EMINENT SCHOLARS AND SPECIALISTS

THIRTY VOLUMES

ILLUSTRATED

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SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

Note.—(-) is the mark dividing words respelt phonetically into syllables; (′), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-symbols employed in Respelling.	Representing the Sounds as exemplified in the Words.	Words respelt with Sound-symbols and Marks for Pronunciation.
ā	mate, fate, fail, aye	*māt, fāt, fāl, ā.*
ă	mat, fat	*măt, făt.*
â	far, calm, father	*fâr, kâm, fâ′ther.*
ä	care, fair	*cär, fär.*
aw	fall, laud, law	*fawl, lawd, law.*
ē	mete, meat, feet, free	*mēt, mēt, fēt, frē.*
ĕ	met, bed	*mĕt, bĕd.*
ė	her, stir, heard, cur	*hėr. stėr, hėrd, kėr.*
ī	pine, ply, height	*pīn, plī, hīt.*
ĭ	pin, nymph, ability	*pĭn, nĭmf, ă-bĭl′ĭ-tĭ.*
ō	note, toll, soul	*nōt, tōl, sōl.*
ŏ	not, plot	*nŏt, plŏt.*
ô	move, smooth	*môv, smôth.*
ö	Goethe (similar to *e* in her)	*gö′teh.*
ow	noun, bough, cow	*nown, bow, kow.*
oy	boy, boil	*boy, boyl.*
ū	pure, dew, few	*pūr, dū, fū.*
ŭ	bud, come, tough	*bŭd, kŭm, tŭf.*
û	full, push, good	*fûl, pûsh, gûd.*
ü	French plume, Scotch guid	*plüm, güd.*
ch	chair, match	*chär, măch.*
ċh	German buch, Heidelberg, Scotch loch (guttural)	*bôċh, hī′dėl-bĕrċh, lŏċh.*
g	game, go, gun	*gām, gō, gŭn.*
j	judge, gem, gin	*jŭj, jĕm, jĭn.*
k	king, cat, cot, cut	*kĭng, kăt, kŏt, kŭt.*
s	sit, scene, cell, city, cypress	*sĭt, sēn, sĕl, sĭt′ĭ, sī′prĕs.*
sh	shun, ambition	*shŭn, ăm-bĭsh′ŭn.*
th	thing, breath	*thĭng, brĕth.*
ṫh	though, breathe	*thō, brēṫh.*
z	zeal, maze, muse	*zēl, māz, mūz.*
zh	azure, vision	*ăzh′ėr, vĭzh′ŭn.*

CROQUET, n. *krō-kā'* or *krō'kā* [F. *croquet*, crisp bread, a hard bake or biscuit. *Note.*—This word is a F. spelling only, and its origin is doubtful: perhaps it is merely a corruption of an imitative cry, such as, *croc croc;* or, from mid. L. *croca*, a curved stick; Icel. *krokr*, a crook]: open-air game, in which two or more players endeavor to drive balls, by means of mallets, through a series of arches set in the ground according to some pattern. The player who first makes the complete tour of arches and stakes wins; but during the game each player may have the progress of his ball retarded by his adversaries, or assisted by his allies. Although generally spoken of as a modern game, it seems to be really a revival with modifications of the sport with a mallet and ball which was popular in England in the days of the Stuarts, and gave the name Pall Mall to localities in various towns in England as well as on the continent (see BALL). The name (It. *palla*, a ball, and *maglio*, mallet; Fr. *palemaille*), suggests an Italian origin; but the game was early in vogue in France, and thence passed into England, probably in the beginning of the 17th century. Blount's *Glossographia* describes the game (see BALL), and gives figures of the mallets. This game seems to have gone out of fashion early in the 18th century. Who resuscitated it in its modern form, and how it got the name of croquet, are questions that have not been answered. Since 1850, C. has been a favorite game, and was for a time the most prevalent of all summer amusements, though latterly it has largely given place to lawn-tennis.

The game may be very well played on a well-rolled close-cut lawn, but for delicacy and accuracy of play and for scientific skill, the modern ground is made a perfectly level hard-rolled sanded field. All tournament games must be played on a ground of this kind. The sanded surface gathers no dampness as evening hours approach (the most common time for play, especially in warm weather); and the caution against damp feet on the dew-covered grass is unnecessary. Lawn-C., however, is not to be discouraged. From the ranks of good lawn-players the best scientific players have come; and it fosters a love for the game.

In preparing the C. field, the top-soil should be sifted if necessary to free it from stones and pebbles, and covered after hard rolling with a very slight sprinkling of fine sand. The allotted field should be surrounded by an upright board or other barrier four or five inches high to keep the balls within limits, with corner pieces 18 inches long. An inside boundary line is made about three feet within the outside barrier, upon which to place balls in position for play that have passed over the boundary line and have not rolled back. It is simply a mark or scratch in the sand made around the field; and the three feet between this inside and the outside bound may well be a slope, so that the balls may roll back gently.

The C. field should measure 80x45 ft. The surface should be well rolled dirt, lightly sanded to hold the balls. The arches must not be more than four inches in width and eight to ten inches above ground. In all prize tournament games the arches must be not more than three and three-fourth inches

in width, and the 'cage' or centre wicket must be not more than three and one-half inches in width by 18 inches in length. This wicket must be set in the centre of the field with its long axis at right angles with a line drawn from stake to stake. It is so situated to make the 'wiring' of balls more difficult.

The arches should be sunk into the ground six or eight inches, or set in blocks of wood, buried under the surface, to insure stability. When the ground will admit of it, the stakes should be placed 70 ft. apart; the first arch 7 ft. in front of the starting stake; the second, 7 ft. from the first; the third, 14 ft. to the right, and one foot in advance, of the second; the fourth on a line with the first and second, and 21 ft. in advance of the second; the remaining five at the same relative distances: thus there will be five arches in line between the stakes, and four wing arches. It will be seen from the above that the course of play is from the second arch to the third on the right.

The mallets should be of boxwood, seven or seven and one-half inches long, by two and one-fourth to two and one-half inches in diameter, and the handle from eight to fifteen inches in length, as best suits the player. The best balls are of hard rubber; and in all National Association games they must be of hard rubber, three and one fourth inches in diameter. They can be easily painted, by using a preparation of shellac dissolved in alcohol, mixing with Chinese vermilion for red, Prussian blue and zinc or flake white for blue; and zinc or flake white for white. Thus painted they will dry in a few minutes and wear for several days.

C. is as scientific as billiards, but with a greater field (literally as well as otherwise) for strategy, the exercise of deliberate judgment, nerve, coolness and boldness of play. The eye and the hand become trained. Lawn-tennis calls for muscular action in immediate response to counter-play: judgment must be instantaneous, and muscular movements rapid and fatiguing. C. stands in strong contrast with its deliberate strokes, its moderate exercise and non-fatiguing efforts even when prolonged.

The chief points of excellence in C. may be enumerated as follows:

First: Accuracy in croqueting or making one ball hit another from the blow of the mallet. Here the accurate eye and the trained hand are needed, for at a distance of 80 ft. a ball 3¼ inches in diameter subtends a very small angle, and a very small divergence of the line of direction of the impinging mallet will cause the struck ball to go wide of its desired course.

Second: Ability to take position in front of arches so as to pass through them successfully, for the arches being only 3½ inches wide give little chance of passing through to a ball of 3¼ inches when in a 'wild position.'

Third: 'Wiring' or 'staking' an adversary's ball so as to leave no ball 'open' or 'exposed.' This is done sometimes from a distance of 15 or 20 ft.

Fourth, and greatest of all, is good generalship, without which all excellence attained in the three preceding points

will be vain in a hard-fought game. Closely associated with the first is the ability to 'drive' or 'block' the ball at a certain angle to reach a position desired. This will be attempted only when balls are near together, for at a long range roquet only is attempted. Perhaps 'jump-shooting' ought to be added to these, by which players frequently are relieved from an otherwise inextricable position by a peculiar downward stroke on the top of the ball just back of its centre, causing the ball to pass over one or more intervening arches and 'capture' a ball supposed to be safe from all danger.

In this as in every other game there are certain general principles which should guide one in his play.

As regards position in striking, a player should suit himself. Too long an aim is to be avoided: a quick stroke after getting the line between two balls is generally the most accurate; but there is one point that all must observe if the ball is to hit the mark: after getting the line of aim, and the mallet resting ready for the stroke, the player's eyes should be kept fixed on his own ball. Any deviation from this rule, either for short or long shots, will end in failure.

As to a few general principles to be observed:

First: Keep your own balls together, and separate those of your adversary.

Second: Keep with you or your partner the 'innocent' or last played ball of your adversary.

Thirk: Keep the 'guilty' or next playing ball of your adversary wired as much as possible.

Fourth: When you can make no further run, give your partner the best set-up you can.

Fifth: Do not play for the guilty ball, when if you miss you give him a chance better than he has before.

Sixth: If you have but a poor chance to make a run, set up the balls for your partner.

Seventh: In making a run, provide as much as possible for points ahead. Do not leave balls behind you if you can avoid it.

The following (adopted New York, 1885) are the Rules of the National American Croquet Association, with the substance of this article, are from the manual of A. G. Spalding & Bros., New York, authorized publishers for the association.

INTERFERING WITH PLAYERS.

1. No player or other person shall be permitted to interfere with the result of a game by any word or act calculated to embarrass the player, nor shall any one speak to a player while in the act of shooting, except a partner.

ORDER OF COLORS.

2. The order of colors shall be red, white, blue, black.

MALLETS.

3. There shall be no restriction in kind or size of mallet used—one or two hands may be used in striking.

4. No player shall change his mallet during a game without permission of his opponent, except in case of accident, or to make a 'jump-shot.'

5. Should a ball or mallet break in striking, the player may demand another stroke, with a new ball or mallet.

CLIPS OR MARKERS.

6. Every player shall be provided with a clip or indicator, the same color as his ball, painted on one side only, which he must affix to his arch next in order in course of play, before his partner plays, with the painted side showing the direction in which he is going. Should he fail to do so, his clip must remain upon the arch itr ested on before he played, and he must make the points again. Should he move his marker beyond or back of the point he is for, his attention must be called to such error before he plays again, otherwise it shall be allowed to stand. Should a player put a ball through its arch, he must at once move the corresponding clip.

OPENING OF GAME.

7. The game shall be opened by scoring from the upper border for an imaginary line drawn through the middle wicket.

8. The first play with each ball shall be made after placing it on a line half-way between the starting stake and the first arch, and play may be made for the arch on any ball that is in play, or in any direction the player may choose.

9. A ball for the first arch failing to make it, must re main where it rests. It can be roqueted, roquet-croqueted, and can, in its proper turn, roquet and roquet-croquet any ball on the field, the same as though it had run the arch.

BALLS: HOW STRUCK.

10. The ball must be struck with the face of the mallet, the stroke being delivered whenever touching the ball it moves it. Should a stake or wire intervene, the player cannot strike them unless the ball is struck at the same time, and if the ball is moved, without being struck by the face of the mallet, 'it shall remain where it rests, and should a point be made, or hit, it shall not be allowed, except by the decision of the umpire as to the fairness of the shot.'

11. When making a direct shot (i.e., roquet), the player must not push or follow the ball with his mallet; but when taking croquet from a ball (two balls being in contact), he may follow his ball with the mallet, but must not strike it twice.

12. If a player strikes his ball before his opponent has finished his play, the stroke shall stand, or be made over, at the option of the opponent.

13. Should a ball rest against or near a wire, and the umpire, or other person agreed on, should decide that in order to pass through the arch less than half the ball would be on the far side when impinging on the opposite wire, it shall be considered a push shot and shall not be made.

BALLS: WHEN NOT TO BE TOUCHED.

14. A ball must not be touched while on the field, ex-

cept after a roquet, when it is necessary to place it beside the roqueted ball for the purpose of croquet, or to replace it when it has been moved by accident—except by permission of the opponent.

ROQUET AND CROQUET.

15. A ball roquets another when it comes in contact with it by a blow from the player's mallet, or rebounds from a wicket or stake, also when it comes in contact with it when roquet-croquet is taken from another ball; but not when rebounding from any obstacle that marks the limit of the field; and should a ball be thus moved, it shall be replaced berore play can proceed.

16. A player after making roquet shall not stop his ball for the purpose of preventing its hitting another. Should he do so, his play ceases and all balls shall be replaced as before the stroke, or remain, at the option of the opponent.

17. Loose croquet, or roquet-croquet, is striking a ball when it is in contact with another where it has been placed for the purpose of croquet, after roqueting it.

18. Roquet gives to the player the privilege of roquet-croquet only, and play must be made from the roqueted ball.

19. If a player in taking a roquet-croquet from a ball fails to move it, such stroke ends his play, and the ball must be returned, or left where it stops, at the option of the opponent.

20. A player, in each turn of play, is at liberty to roquet any ball on the ground once only before making a point.

21. Should a player roquet-croquet a ball he has not roqueted, he loses his turn, and all balls moved by such play must be replaced to the satisfaction of the umpire, or adversary. Should the mistake not be discovered before the player has made another stroke, the play shall be valid and the player continued his play.

22. In taking roquet-croquet from a ball, if player's ball strikes another that he has already croqueted, such stroke does not end his play.

23. If a player roquets two or more balls at the same stroke, he must use the first ball roqueted only.

MAKING OF POINTS.

24. A player makes a point in the game when he runs an arch or strikes a stake in his proper play.

25. If a player makes a point, and afterwards at the same stroke roquets a ball, he must take the point, and use the ball. If the roqueted ball is beyond the arch, as determined by rule 46, and playing ball rests through the arch, the arch is held to be first made.*

26. If a ball roquets another, and afterwards at the same stroke makes a point, it must take the ball and reject the point.†

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* While this is not mathematically correct, the rule is so made to avoid disputes and difficult measurements.

† See note to rule 25.

27. A player continues to play so long as he makes a point in the game, or roquets another ball to which he is in play.

28. A ball making two or more points at the same stroke has only the same privilege as if it made but one.

29. Should a ball be driven through its arch, or against its stake, by roquet-croquet or concussion, it is a point made by that ball, except it be a rover.

PLAYING ON DEAD BALL.

30. If a player play by direct shot on a dead ball, all balls displaced by such shot shall be replaced in their former position, and the player's ball placed against the dead ball on the side from which it came; or all balls rest where they lie, at the option of the opponent.

31. If a player, in making a direct shot, strike a ball on which he has already played, i.e., a dead ball, his play ceases. Any point or part of a point or ball struck, after striking the dead ball, is not allowed. And both balls must be replaced in accordance with rule 30.

But if playing ball in passing through its arch strike a dead ball that is beyond the arch, as determined by rule 46, the ball shall not be considered a dead ball if playing ball rests through its arch, and the point shall be allowed.‡

BALLS MOVED OR INTERFERED WITH BY ACCIDENT OR DESIGN.

32. A ball accidentally misplaced, otherwise than as provided for in rule 37, must be returned to its position before play can proceed.

33. If a ball is stopped or diverted from its course by an opponent, the player may repeat the shot or not as he chooses. Should he decline to make the shot over, the ball must remain where it stops, and, if playing ball, must play from there.

34. If a ball is stopped or diverted from its course by a player or his partner, the opponent may demand a repetition of the shot if he chooses. Should he decline to do so, the ball must remain where it stops, and, if playing ball, must play from there.

35. If a ball, while rolling, is stopped or diverted from its course, by any object inside the ground, not pertaining to the game or ground, other than provided for in rules 33 and 34, the shot may be taken over, or allowed to remain at the option of the player. If not taken over, the ball must remain where it stops, and, if playing ball, play from there.

BALLS IN CONTACT.

36. Should a player, on commencing his play, find his ball in contact with another, he may hit his own as he likes, and then has subsequent privileges the same as though the balls were separated an inch or more.

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‡ A dead ball displaced by other than direct shot shall not be replaced.

FOUL STROKE.

37. Should a player in making a stroke move with his mallet any other than his object ball, it shall be a foul and his play ceases, and all balls moved shall be replaced as before the stroke, or remain where they rest, at the option of the opponent.

See rules 10, 11, and 12.

BOUNDARY LINES.

38. A ball shot over boundary line must be returned at right angles from where it stops before play can proceed.

39. A ball is in the field, only when the whole ball is within the boundary line.

40. No play is allowed from beyond the boundary line, except when a ball is placed in contact with another for the purpose of roquet-croquet.

41. If a player strikes his ball when over the boundary line, he shall lose his stroke and the balls shall be replaced or left where they stop, at the option of the opponent.

42. If a player roquet a ball that is off the field, either by direct shot or from roquet-croquet, the stroke shall not be allowed; and such roqueted ball shall be placed in the field opposite the point where it lay, before being thus hit. And if such roquet ball is made by a direct shot, the play ceases.

43. The first ball driven over the boundary line into a corner must be placed on the corner at the intersection of the two boundary lines.

44. If a ball, having been struck over the boundary line, is returnable at the corner, another ball being on or entitled to the corner, it shall be placed on that side of the corner on which it went off.

45. If two balls having been shot over the boundary line rest directly behind one another at right angles with boundary line, they shall be placed on the line alongside of each other in the direction from whence they were played off. This can occur only when the centres of the two balls rest directly behind one another at right angles with the boundary line.

BALL: WHEN THROUGH AN ARCH.

46. A ball is not through an arch when a straight edge, laid across the two wires on the side from whence the ball comes, touches the ball without moving the arch.*

BALLS. WHEN IN POSITION.

47. If a ball has been placed under an arch, for the

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* The English rule on Dead Boundary is as follows:

If, in taking croquet, the striker send his own ball or the ball croqueted off the ground, he loses the remainder of his turn; but if by the same stroke he makes a roquet, his ball being in hand, may pass the boundary without penalty, provided the croqueted ball does not pass the boundary. Should either ball, while rolling after a croquet, be touched or diverted from its course by an opponent, the striker has the option of taking the stroke again or not (in accordance with rule 33 of these rules) and is not liable to lose his turn should the ball which has been touched or diverted pass the boundary.

purpose of roquet-croquet, it is not in position to run that arch.

48. If a ball be driven under its arch from the wrong direction, and rests there, it is not in position to run that arch in the right direction.

49. If a ball shot through its arch in the right direction, rolls back through or under that arch, the point is not made, but the ball is in position if left there.

HITTING BALL WHILE MAKING WICKET.

50. Cage wickets may be made in one, two, or more turns, provided the ball stops within limit of the cage.

51. Any playing ball within, or under, a wicket, becomes dead to advancement through the wicket from that position, if it comes in contact with any other ball by a direct shot.

ROVERS.

52. A rover is a ball that has run every arch and hit the turning stake in its proper turn of play.

53. A rover has the right of roqueting and roquet-croqueting every ball on the ground once during each turn of play, and is subject to being roqueted and roquet-croqueted by any ball in play.

54. Rovers must be continued in the game until partners become rovers, and go out successive, and a rover that has been driven against the stake cannot be removed to make way for the next rover.

PLAYING OUT OF TURN, OR WRONG BALL.

55. If a player plays out of his proper turn, whether with his own or any other ball, or in his proper turn plays the wrong ball, and the mistake is discovered before the next player has commenced his play, all benefit from any point or points made is lost, and his turn of play forfeited. All balls moved by the misplay must be returned to their former position by the umpire or adversary. If the mistake is not discovered until after the next player has made his first stroke, the error must stand.

POINTS REMADE.

56. If a player makes a point he has already made his marker not being on that point, and the mistake is discovered before the next point is made, the play ceases with the shot by which the wicket was remade, and the marker remains where it stood at the beginning of this play. All balls shall be left in the position they had at the time the wicket was remade. If not discovered before the next point is made, the points so made are good, and play proceeds the same as if no error had been made.

ERROR IN ORDER OF PLAY.

57. If an error in order is discovered after a player has struck his ball, he shall be allowed to finish his play provided he is playing in the regular sequence of his partner's ball last played. In case of dispute as to proper sequence of balls, it shall be decided by the umpire; if there is no

umpire, by lot. No recourse shall be had to lot unless each party expresses the belief that the other is wrong,

57. At any time an error in order is discovered, the opposite side shall follow with the same ball last played; (the proper sequence); but before playing, their opponents shall have privilege to demand a transposition of adversaries' balls.

Example.—Black plays by mistake after red—the error is not discovered—blue plays in the proper sequence of his partner red, and seeing that black has just played, is thus led to believe it the innocent ball, and upon concluding his play leaves black by red. Now if error in order is discovered, the player of red and blue can demand that the position of black and white be transposed.

CHANGING SURFACE OF GROUND.

59. The surface of grounds shall not be changed during a game by either player, unless by consent of the umpire; and if so changed at the time of playing, the shot shall be declared lost.

CORNER PIECES.

60. In all subsequent construction of grounds a corner piece eighteen inches in length shall be inserted, leaving the boundary of the grounds inside, however, square at the corners.

PENALTY: GENERAL RULE.

61. If a rule is violated, a penalty for which has not been provided, the player shall cease his play.

TERMS USED IN CROQUETS.

To Roquet.—To hit with one's own ball another ball for the first time.

To Croquet.—To place player's ball against the roqueted ball and then striking his own ball, moving both.

In Play.—A ball is in play so long as points are made, or balls hit in accordance with the rules.

Points.—See rule 24.

Dead Ball.—The ball on which the player has played since making a point. It is then *dead* to the player till he makes another point.

Direct Shot—Roquet.—This is a direct shot, whether the ball in passing to its destination does or does not carom from a wire or stake.

Drive or Block—English 'Rush.'—A roquet played so as to send the object ball to some desired spot.

Cut.—To drive the object ball to a desired position, by causing player's ball to hit it on one side.

Run or Break.—The making of a number of points in the same turn.

Set Up.—To locate the balls, so as to afford facility for making the next point or run.

Wiring.—To so leave the balls, that the next player finds a wire or stake between his ball and the object ball.

Object Ball.—The ball at which the player aims.

Jump-shot.—Striking the ball so as to make it jump over

any obstacle between it and the object aimed at. To do this, the ball should be struck with considerable force on the top just back of the centre.

Guilty Ball.—The next player on the adversary's side.

Innocent Ball.—The last played ball of the adversary.

Rover.—One who has made all the points except the last.

The National American Croquet Association meets in Norwich on the Monday preceding the third Tuesday in August. In New York are grounds corner of 88th st. and Madison ave.; also at Mariner's Harbor, Staten Island, and at New Brunswick, N. J. Philadelphia has grounds at 22d and Brown sts. Danbury, New London, and Hartford, Conn., also Florence, North Adams, and Malden, Mass., have good grounds. Cottage City, Martha's Vineyard, has fine grounds for summer play; and at Saratoga Springs there is a good ground.

The western clubs have a style of play a little different; but it would be easy to unify all existing games of the so-called 'loose' or 'tight' croquet. At Elyria, Ohio, are covered grounds and fine players.

CRORE, n. *krōr:* in the *East Indies*, 100 lacs of rupees, equal to about one million sterling; ten millions, not necessarily of rupees only.

CROSBY, Ernest Howard, American social reformer: b. New York 1856 Nov. 4; d. 1907 Jan. 3; a son of Howard Crosby (q.v.). He was educated at the University of New York, and practiced law in his native city 1878–89. Afterwards he gave his attention mainly to matters connected with social reform. He was strongly influenced by Tolstoy's teachings. He wrote *Plain Talk in Psalm and Parable* (1899); *War Echoes; Captain Jinks: Hero* (1902); *Tolstoy and His Message* (1904); and *William Lloyd Garrison* (1905).

CROSBY, Frances Jane Van Alstyne, American hymn writer: b. Southeast, N. Y., 1820, March 4. She became blind at the age of six months; entered the New York Institute for the Blind 1839, and was a teacher of English and history there 1847–58, when she married Alexander Van Alstyne, a blind music teacher. She has written more than 3,000 hymns, many of which have become perennially popular, and powerful aids in evangelistic work. Publications: *The Blind Girl and other Poems* (1844); *Monterey and other Poems* (1849); *A Wreath of Columbia's Flowers* (1858); *Bells at Evening and other Poems* (1898). Of her hymns perhaps the best known are: *Safe in the Arms of Jesus*, and *Jesus the Water of Life Will Give.* Most of the popular ones are included in Moody and Sankey's *Gospel Hymns*, and Sankey's *Sacred Songs and Solos.* Among her songs may be mentioned *There's Music in the Air* and *Hazel Dell.*

CROSBY, *kroz'bĭ*, Howard, d.d., ll.d.: Presb. clergyman: b. New York, 1826, Feb. 27; d. 1891, Mar. 29. He graduated at the Univ. of the City of New York 1844, was

appointed prof. of Greek there 1851, and in Rutgers College 1859; ordained 1861, and pastor First Presb. Church, New Brunswick, 1861–63; and pastor Fourth Ave. Presb. Church, New York, since 1863. He was chancellor of the Univ. of the City of New York 1870–81; moderator of the Gen. Assembly of the Presb. Church in the U. S. A. 1873; member of the American Bible Revision Committee 1870–81; and was president of the Soc. for the Prevention of Crime from 1877. He received the degree D.D. from Harvard 1859, and LL.D. from Columbia 1872.

CROSBY, John Schuyler, American soldier: b. Watervliet, Albany County, N. Y., 1839, Sept. 19. He is a lineal descendant of the Floyds and Schuylers of the Revolutionary period. He was personal aide-de-camp to Gen. Phil Sheridan for five years during and following the Civil War, and was brevetted several times for gallantry, retiring from the army in 1871 as colonel. Was adjutant-general of the expeditions against hostile Indians by Gens. Sheridan, Custer, and others, and did much for peace in the disturbed West, representing the government in many conferences with Indians. In 1876 he was awarded a gold medal by Congress for saving life at sea. He was appointed consul to Florence, Italy, that same year, was territorial governor of Montana 1881–3, and first assistant postmaster-general of the United States 1883–5. Since then he has served as school commissioner of the city of New York, etc., and continues prominent in Republican politics.

CROSBY, Peirce, American naval officer: b. near Chester, Pa., 1823, Jan. 16; d. Washington, D. C., 1899, June 15. He entered the navy as midshipman in 1838. In the spring and summer of 1861 he served in Chesapeake Bay. The next year he commanded the gun boat Pinola, joined Farragut's gulf squadron, and participated in the capture of New Orleans and the bombardment of Vicksburg. After the war he was commandant at various navy yards; became commodore in 1874, rear-admiral in 1882, and was retired at his own request 1883, Oct.

CROSBY, William Otis, American geologist: b. Washington County, Ohio, 1850, Jan. 14. He was graduated at the Massachusetts Institute of Technology 1876, and has been a member of its faculty since 1883, his present position (1903) being associate professor of geology. His publications include: *Report on the Geological Map of Massachusetts* (1876); *Native Bitumens, and the Pitch Lake of Trinidad* (1879); *Contributions to the Geology of Eastern Massachusetts* (1880); *Common Minerals and Rocks* (1881; new ed. 1886); *Dynamical and Structural Geology;* and many papers relating to his specialty.

CROSS, n. *krŏs* [F. *croix:* OF. *crois*, a cross—from L. *crŭcem*, a cross: It. *croce:* Icel. *kross:* Ger. *kreuz*, a cross for the punishment of malefactors (see Cross 2, note)]: two lengths of any body placed across each other—thus(+), (×), or (†); a line drawn through another; the symbol of

the Christian religion; the religion itself; the instrument on which the Saviour died; the sufferings and atonements of Christ; a hindrance; affliction; a piece of money so named as marked on one side with a cross: V. to draw a line, or place a body across another; to make the sign of the cross; to pass or move over; to pass from side to side; to cancel; to erase; to obstruct or hinder; to contravene; to thwart: ADJ. oblique; interchanged; transverse; obstructing; adverse: PREP. in *OE.*, for across. CROS'SING, imp.: N. a paved part for passing across a street. CROSSED, pp. *krŏst.* CROSSETTE, n. *krŏs-sĕt'*, in *arch.*, the small projecting pieces in arch-stones which hang upon the adjacent stones. CROSS'LY, ad. *-lĭ*, adversely; in opposition. CROSS'NESS, n. state of being cross. CROSS'LET, n. a little cross. CROSS-ACTION, in *law*, a case in which A having an action against B, B also brings an action against A on the same case. CROSS-ARMED, having arms across. CROSS-BAR, n. a kind of lever. CROSS-BARRED, *-bârd*, secured by bars crossing each other. CROSS-BEAM, a large beam running from wall to wall. CROSSBILL, a bird so called from the form of the bill. CROSSBOW, n. a weapon formed by fastening a bow at the end of a stock: see ARBALEST: ARCHER: BOW AND ARROW. CROSS-BREEDING: see BREEDING. CROSS-BUN, a bun with the form of a cross on one side. CROSS-COURSE, in *mining*, a vein or lode which intersects at right angles the general direction of the veins. CROSS CROSSLET: see CROSS below. CROSS-CUT, in *mining*, a level driven at right angles with the view of intersecting a lode or vein. CROSS-CUT SAW, a saw that cuts across the grain of the wood, thus differing from a ripping saw. CROSS-DAYS, the three days preceding Ascension-day. CROSS-EXAMINATION, a strict examination of a witness by the opposing counsel. CROSS-FROG, an arrangement of crossing rails at a rectangular intersection of roads. Each track is notched for the passage of the flanges of the wheels traversing the other track; a crossing. CROSS-GRAINED, having the fibres cross or irregular. CROSS-HEAD, a beam or rod across the top part of anything. CROSS-JACK, the lower yard of the mizzen-mast. CROSS-PURPOSE, contradictory conduct or conversation arising from a misunderstanding; the proposing of a difficulty to be solved; a riddle. CROSS-READING in. the combination of words produced by reading the lines of a newspaper, etc., directly across the page, instead of down each column. CROSS-REFERENCE, reference to another title or portion of the same work, specially in dictionaries and cyclopedias. CROSS-ROAD, an obscure road or path leading from one main road to another, or intersecting it. CROSS ROADS, a place where roads cross, where often there is a settlement. CROSS SEA, waves running high across others; a swell. CROSS-STAFF, a surveyor's instrument for measuring offsets. CROSS-STONE, harmotome or pyramidal zeolite. CROSS-TIE, a railway sleeper; in *arch.*, a connecting-band in a building. CROSS-TINING, n. a mode of harrowing cross

wise or transversely to the ridges. CROSS-TREES, in *ships*, certain pieces of timber at the upper ends of the lower masts and topmasts. CROSS-WIND, an unfavorable or side wind. CROSSWISE, ad. *-wīz*, across, in the form of a cross. A CROSSED CHECH: see CHECK. TO CROSS THE BREED, to breed animals from different varieties of the same species (see BREEDING). TO CROSS-QUESTION, to examine again in another direction. TO PLAY CROSS AND PILE, to play at tossing up money which had a cross on one side and a pile or pillar on the other. TO TAKE UP THE CROSS, to submit to afflictions and self-denial for love to Christ, or in duty.

CROSS, n. *krŏs* [Gael. *crois*, misfortune, disappointment; *crosan* an ill-tempered person (see CROSS 1)]: a thwarting of one's wishes; peevishness: ADJ. out of humor; peevish; ill-tempered; perverse; troblesome. *Note.*—This entry is partly included under CROSS 1, but has no necessary connection with the cross on which the Saviour died, other than as one of those complications between sound and sense so common in our and other languages. On that account, therefore, we expect to find a confusion in the etymologies proper to each, and no less so in the derived meanings.—SYN. of 'cross, n. 1 and 2': vexation; affliction; trial; opposition; disappointment; fretfulness; petulance; misfortune.

CROSS: common instrument of capital punishment among the ancients; esteemed so dishonorable that only slaves and malefactors of the lowest class were subjected to it by the Romans. It was customary to proclaim the name and offense of the person crucified, or to affix a tablet (*album*) to the C., on which they were inscribed. Malefactors were sometimes fastened on a simple upright stake, and so left to die, or they were impaled upon it, and to this upright stake the Latin name *crux* was originally and more strictly applicable; but very generally a cross-piece (*patibulum*) was added to the stake, to which the arms of the criminal were tied, or to which his hands were nailed. When the cross-piece was fastened at right angles below the summit of the upright stake, the C. was called *cruix immissa;* when the cross-piece was fastened at right angles across the top of the upright stake, the C. was *cruix commissa;* and when it was formed of two beams crossing one another obliquely, it was *cruix decussata.* The C. was erected outside the gates of towns, but in places of frequent resort. The person crucified often lived for days upon the cross. The death of Christ by crucifixion led Christians to regard the C. with peculiar feelings of reverence, and to make use of the sign of the C. as a holy and distinguishing sign. The custom of *crossing*, in honor and commemoration of Christ, can be traced back to the 3d c. The emperor Constantine, after obtaining the victory over Maxentius, through the influence —as he believed—of the sign of the C., caused crosses to be set up in public places and upon public buildings; and the veneration of the C. increased, particularly after the *Invention of the C.*, or finding of the alleged true C. of Christ in Jerusalem by the empress Helena: see CROSS, INVENTION OF. The desire for relics was gratified, and numberless

portions of the true C. were given away, without its substance being diminished. Iconoclasts and others contended in vain against the prevalent worship of the C.; and the *crucifix* (q.v.), a C. with an image of the Savior affixed to it, was honored more than any other image. The sign of the C. is made not only by Rom. Catholics, but by the members of the Eastern churches also; there are, however, distinctive differences in the manner in which it is made. It is admitted by the Lutherans as a commemorative sign of the atoning death of Christ, but by many Protestants is rejected as a human invention in worship, and as tending to superstition. It was very generally during the middle ages, and still is among the less enlightened peasantry in some Rom. Cath. countries, a sort of charm, believed to afford some security, like an amulet, against all evil, particularly against evil spirits and witchcraft.

It appears that the sign of the C. was in use as an emblem, having certain religious and mystic meanings attached to it, long before the Christian era; and the Spanish conquerors were astonished to find it an object of religious veneration among the natives of Central and S. America. Be this as it may, it was early adopted as a symbol by Christians, with express reference to the central fact of their religion, and it has been extensively used as an ornament in Christian architecture, and in the ground-plan of churches (q.v.). The C. of the Resurrection is distinguished from the C. of the Passion by ecclesiastical writers. It is a lance, headed by a C. instead of a pike, and carrying a banner upon which a C. is depicted. It is the C. held by the paschal lamb, and carried at the head of religious processions. The large C. always placed over the entrance of the main chancel of a church, was called the *rood*, or *holy rood*. A representation is here given of the top of one of these large ornamental crosses.

The forms given to crosses in art are endless; but the two leading types are the Latin C., or *crux immissa*, supposed to be that on which Christ suffered, and the Greek C., both of which are subject to many fantastic variations. The Greek C. forms the well-known C. of St. George, which, adopted from the legends of that hero, was the national ensign or

Greek Cross. Latin Cross. St. Andrew's Cross.

the English previous to the union with Scotland. The C. of St. Andrew differed entirely in form from the Latin or Greek cross. This C., or *crux decussata*, consisted of two shafts of equal length crossed diagonally at the middle, as in the annexed cut. According to the legend, this was the

form of C. on which St. Andrew, the national saint of Scotland, suffered martyrdom. As the Scottish ensign, it is now blended with the C. of St. George in the Union Jack.

Many very beautiful crosses are seen in England, upon the points of gables of churches, on grave-stones, and in other situations; also in heraldry. Among these, the C. most commonly seen is called the *C. crosslet.* In this figure, as seen in the annexed cut, the extremities are intersected, so as to make several small crosses. When employed in ecclesiastical architecture, the figure is usually carved in a florid or highly decorative style. When the C. crosslet is pointed at the lower extremity instead of being crossed, it is in heraldry said to be fitched, or *fitchée.* It is of frequent use in blazon.

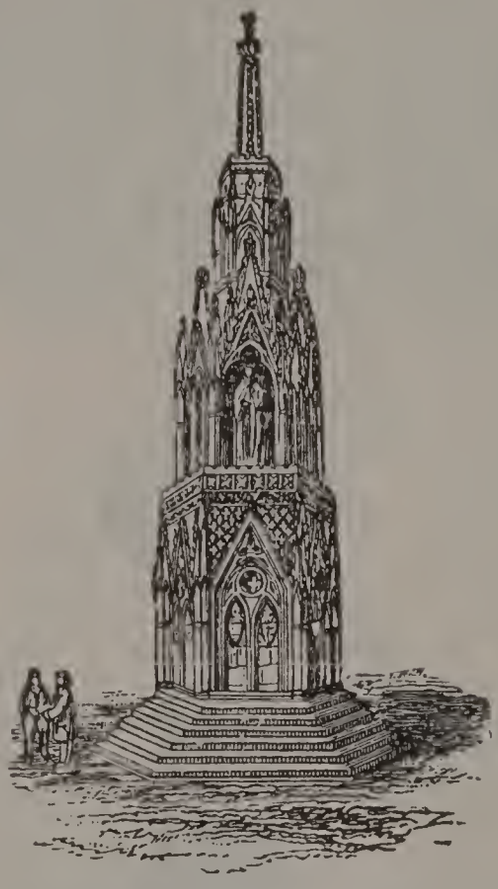
Sanctuary, Boundary, or *Monumental Crosses,* consist of an upright flat pillar or obelisk, covered with sculptured devices, and set in a socket level with the ground. Occasionally, they appear to have marked boundaries, but more frequently were monuments over the graves of heroes, kings, bishops, etc. In some instances, they probably marked the verge of a sanctuary. A characteristic type of cross is the *Celtic Cross,* most frequently found in Ireland and in the n. and w. of Scotland. Such crosses vary much, from a cross

St. Martin's Cross, Iona.

incised on a flat slab to an elaborate cruciform monument. The majority of the latter seem to belong to the period between the 12th and 15th c. One of the best known is that at Iona called St. Martin's Cross, in the grounds of the cathe-

dral. It is a column of compact mica schist, 14 ft. high, 18 inches broad, and 6 inches thick, and is fixed in a pedestal formed out of a massive block of red granite, about 3 ft. high. In connection with certain ancient religious houses in Ireland, there were very fine Celtic crosses. Some crosses of this type show Scandinavian workmanship; hence they are often called *Runic* crosses.

Memorial Crosses were erected in memory of some beloved object, or in commemoration of some event of local importance. In England, there are some superb crosses of this kind; they are popularly called *Norman Crosses*. This species of C. resembled a Gothic turret set on the ground, or on a base of a few steps, and was decorated with niches for figures and pinnacles. The best known examples are those

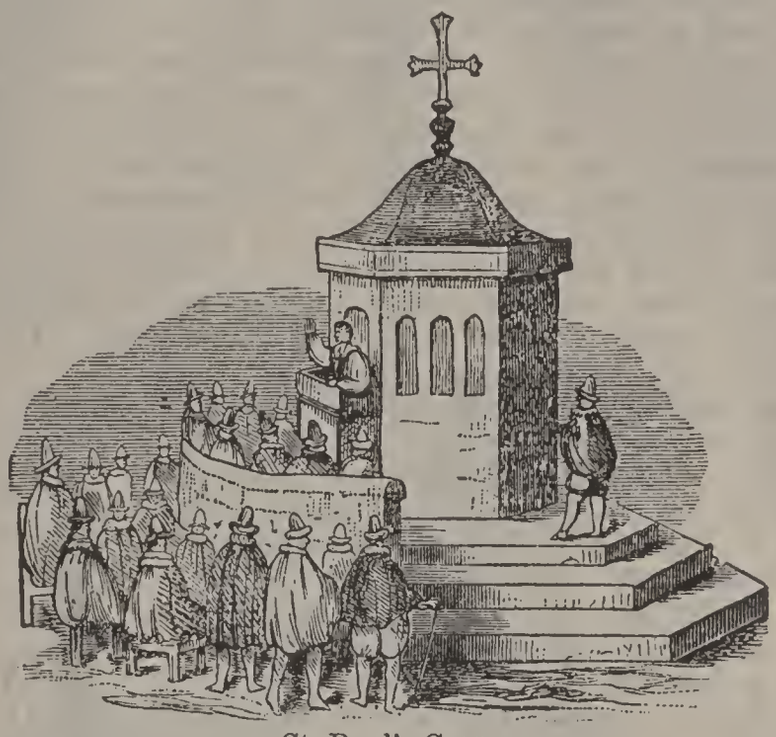


Waltham Cross, restored.

erected by Edward I. (1290) in memory of his queen, Eleanor; being placed on the spots where the body rested in its funeral progress to Westminster. The crosses at Waltham, Cheapside, and Charing were of the number. Those at Cheapside and at Charing are destroyed, but the C. at Waltham, though now much decayed, remains as a testimonial of the affection and piety of the greatest of the Plantagenets. We present a sketch of this beautiful Norman cross, as restored.

Town or *Market Crosses* were erected as stands to preach from, or in commemoration of events regarding which it was deemed proper to evoke pious feelings. As these structures were incorporated with or surmounted by a crucifix, the term *cross* was so indelibly associated with

them that it survived the religious character of the fabrics. 'The general intent of market-crosses was to excite public homage to the religion of Christ crucified, and to inspire men with a sense of morality and piety amidst the ordinary transactions of life.'—Milner's *History of Winchester*. The earliest examples of this kind consisted,



St. Paul's Cross.

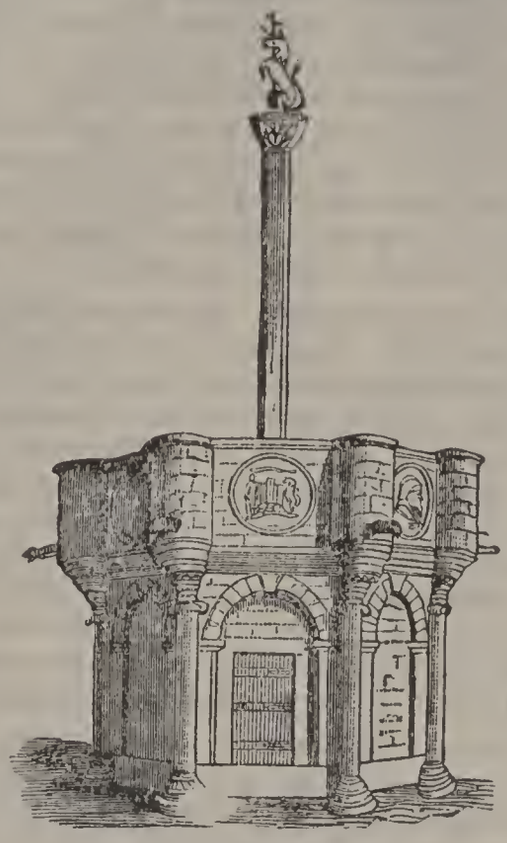
probably, of tall crucifixes of wood, such as are still seen by the waysides in some continental countries. Afterward, stone shafts would be substituted; and according to the increase of market revenues, or progress of taste, these town crosses assumed that imposing character which they latterly possessed. Of the larger ornamental crosses of this kind, there are some striking specimens in England; e.g. that at Cheddar in Somersetshire, and that at Malmesbury in Wiltshire; both are open vaulted structures, with a commodious space beneath, as a refuge for poor market-folks during rain, and surmounted with a kind of Gothic turret. At Chichester, Bristol, and Winchester, the market-crosses, while similar in form, are of a higher architectural quality. See Britton's *Architectural Antiquities.* Adjoining St. Paul's in London, stood Paul's C., a structure which we read of as early as 1259, in the reign of Henry III It was essentially a town-preaching C., and is associated with some interesting occurrences in history. Before this C. the unfortunate Jane Shore was forced to do penance in the reign of Richard III., to whose malice she was made a victim. This event was followed by Dr. Shawe's infamous sermon, attempting to bastardize the children of Edward, and eulogizing Richard, who was present on the occasion. In front of this C. sat Cardinal Wolsey, to hear fulminations against Luther; and about ten years later, by order of Henry VIII., preachers here delivered sermons in favor of the Reformation. At this

C., Queen Elizabeth attended to hear a thanksgiving sermon for the defeat of the Spanish Armada. Here, sermons continued to be delivered until 1643, when, with other so-called relics of popery, the C. incurred the displeasure of the Puritans, and was demolished by order of parliament. Whatever was the original form of Paul's C., it was in later times a plain pulpit like fabric of wood, covered with lead, and, as seen by the preceding cut, was provided with seats for an audience. This inoffensive and really useful preaching C., which might well have been spared, stood on the n. side of the church, a little e. of Cannon Alley.

Scotland offers no specimens of memorial or Norman crosses, excepting, perhaps, the Scott Monument, at Edinburgh, essentially a Norman C. of a gigantic order: see SCOTT, Sir WALTER. As regards the market-crosses of Scotland, they never attained the elaborately ornate character of those of Chichester and Winchester. Yet the Scottish town-crosses had some distinguishing features. The more simple kind consisted of a shaft of stone, generally octangular in shape, and 12 or more ft. in height. At top was an ornamental capital, which bore a dial and vane, or the figure of a unicorn. The shaft sprang from the top of a graduated flight of circular or octangular steps. A specimen is seen in the market-place of Melrose. Another specimen, renovated and set in the quadrangle of the Chambers Institution, Peebles, is shown in the annexed cut. The grander market C. consisted of a tall stone shaft, such as just described, but instead of steps, it sprang from the centre of an imposing sub-structure. This structure was circular, hexagonal, or octagonal, and from 10 to 16 ft. high. The top formed a platform, surrounded with an ornamented stone parapet, and reached by a stair inside. The sides of the building were decorated with pilasters, and bore various heraldic and other devices. Such were the crosses of Edinburgh, and such is the renovated C. of Aberdeen, the sides of which, however, are open. Losing their religious character, the Scottish market-crosses were employed for royal and civic proclamations, and as places where certain judicial writs were executed. The general removal of these ancient and interesting structures has been often matter of lamentation. The oldest C. of Edinburgh, the scene of a number of incidents in Scottish history, stood in the centre of the High street, nearly opposite the entrance to the Parliament Square. It was removed 1617, to make way for a royal pageant, the procession of James VI., on his first visit to Edinburgh after his removal to England. A new market-

Peebles Cross.

C was then erected a short way further down the street, on the s. side. This C. consisted of an octangular sub-structure 16 ft. across, with a handsome stone shaft of about 20 ft. in height; its removal 1756, by the civic au-



Edinburgh Market-cross.

thorities, is indignantly referred to by Scott in *Marmion*. In 1869, the shaft, or cross proper, was re-erected within the railings of St. Giles's church. And in 1885, the whole was restored by Mr. Gladstone, according to the model of that removed 1756; and the ancient shaft re-erected on the new sub-structure, close to its ancient site at the entrance of Parliament Square.

CROSS, in Heraldry: symbol of the Christian faith frequently introduced into the escutcheons of ancient and noble families everywhere in Europe. This seems natural on the theory that the art of blazon originated in connection with the crusades. The cross is one of the honorable ordinaries, and, indeed, from its sacred character, is esteemed by heralds as the most honorable charge. Its form varies so much that Ménestrier counts 42 crosses; La Colombière, 72; and Guillim, 39. Most of the architectural crosses occur in heraldry, with many others.

CROSS, Invention (Finding) of the: festival in the Rom. Cath. Church, commemorating the finding of the alleged true C. of the Savior; celebrated May 3. The empress Helena, mother of Constantine the Great, out of a desire of visiting the holy places, undertook a journey to Palestine 326, though she was then nearly 80 years of age; and being animated with a great desire of finding the C. on which our Savior suffered, she was so well directed, it is said, in the search which she instituted, that the C. was

found, and with it the crosses of the two thieves; but the title being found separate from the cross, a miracle readily determined which was the proper object of reverence. An order of friars, founded in honor of the Invention of the Cross, and carrying in their hand a staff, on the top of which was a cross, received the name of *Croisiers* (Fr. *croix*, cross), corrupted into *Coruched* or *Crutched* Friars. They came to England in the 13th c., and had monasteries in London, Oxford, and Ryegate.—The festival of the *Elevation of the Cross* (Sep. 14) commemorates its re-erection in Jerusalem by the emperor Heraclius 628, after it had been carried away by the Persians.

CROSS, Charles Robert, American physicist: b. Troy, N. Y., 1848, Mar. 29. He graduated at the Massachusetts Institute of Technology 1870, and has taught in its physical department ever since, being at the present time (1903) Thayer professor of physics, and director of the Rogers laboratory. In 1882 he established one of the first courses of electrical engineering ever given in this country, and has been in charge of it ever since. Most of his scientific papers have been published in the 'Proceedings' of the American Academy of Arts and Sciences. He is the author of the text-books: *Course in Elementary Physics* (1873), and *Lecture Notes on Mechanics and Optics* (1884).

CROSS, Mary Ann Evans. See Eliot, George.

CROSS, Order of the: originally a spiritual order of knighthood, which sprang up in Palestine in the time of the Crusades, and was then called the *Bethehemite Order*. After the commencement of the 13th c., the knights of this order adopted the monastic life, settling chiefly in Austria, Bohemia, Moravia, Poland, and Silesia. Pope Gregory IX. confirmed the order 1328. Its principal seat is now in Bohemia, and its members generally hold ecclesiastical preferments or professorships in the univ. of Prague. They are distinguished by a cross of red satin, with a six-pointed star under it, and are sometimes called *Stelliferi*.

CROSS, Southern: most conspicuous constellation in the s. hemisphere; near the Antarctic Circle; therefore never visible in northern latitudes. It consists of four bright stars, to which the fancy, aided by Christian association, readily gives the cruciform shape. The two brilliant stars which mark the summit and foot of the cross have nearly the same right ascension. The constellation, therefore, is almost perpendicular when passing the meridian and these two stars act as pointers to the Antarctic pole.

CROSS, Victoria: decoration instituted on the termination of the Crimean campaign in 1856. It may be granted to a soldier of any rank, and for a single act of valor. Tne Cross of the Legion of Honor, as was felt during the Crimean campaign, served a purpose in the French army which was served by none of the British decorations, and it was in imitation of it that the Victoria Cross was founded, with the inscription 'For Valour,' and which can

be given to none but those who have performed, in presence of the enemy, some signal act of valor or devotion to their country. The general distribution of the crosses earned in the Crimean war (62 in number) was in 1867; and the distinction has since been conferred from time to time. The Victoria Cross is in the form of a Maltese cross, of bronze. In the centre is the royal crown surmounted by the lion, and below, on a scroll, the words, 'For Valour.' The ribbon is blue for the navy, and red for the army. On the clasp are two branches of laurel, and from it the cross hangs, supported by the initial 'V.' The decoration is accompanied by a pension of £10 a year.

CROSS, Wilbur Lucius, American educator: b. Mansfield, Conn., 1862, April 10. He was graduated at Yale 1885; was instructor in English in the Sheffield Scientific School 1894–7; and has been professor there from 1897. He has contributed a number of articles in literary criticism to periodicals; has written *Development of the English Novel* (1899); and has published, with notes and introductory essays, editions of *Macbeth* (1900); *Ivanhoe* (1903); *Silas Marner* (1903); and *Works of Laurence Sterne* and Fitzgerald's *Life of Sterne* (1904).

CROSSBILL (*Loxia*): genus of birds of the family *Fringillidæ*, much resembling bullfinches, linnets, etc., except in the bill, which is altogether singular; the two mandibles—which are rather long, thick at the base, and much curved—crossing each other at the points, when the bill is closed. In different individuals, even of the same species, the upper and lower mandibles are found variously directed to the right and left. This conformation was rashly characterized by Buffon as 'an error and defect in nature, and a useless deformity;' whereas, it is an admirable adaptation to the wants and habits of the birds, and other peculiarities of their structure beautifully correspond with it—the bill being articulated to the head in such a manner that the mandibles are capable not merely of vertical but of lateral motion, and muscles of extraordinary power, in comparison with the size of the bird, are provided for moving them. The result is, that the crossbills readily obtain their principal food, seeds of firs and pines, by tearing up the cones. They bring the points of the mandibles together—which they can do so as to pick up a very small seed—and insert the points into the cone, when a powerful lateral movement widens the opening quite sufficiently, and the tongue, which terminates in a singular movable scoop, formed of a bone articulated to the *os hyoides*, or ordinary bone of the tongue, is inserted to detach the seed. The power of the bill is such that it can be employed in its lateral movements to tear wood to pieces, and crossbills in confinement seem to take a mischievous pleasure in so employing it, and by this means, and pulling at wires, soon destroy any ordinary cage. An apple is cut to pieces almost in an instant, in order that its seeds may

be reached; and flocks of these birds sometimes do great mischief in orchards. Only three species are known, of which one is called the common C. (*L. curvirostra*). In Britain, it sometimes occurs in considerable numbers, but in most years is scarcely seen. It is a native of Europe, Asia, and N. America, dwelling chiefly in pine forests, and extending as far n. as they do, not dreading the coldest climates.

CROSS BUN: small cake specially prepared for Good Friday, and in many towns of England cried about the streets on the morning of that day as 'Hot-cross buns.' [*Bun*, means simply a round cake—properly, a lump, being from the same root as *bunion*, Ital. *bugno*, a bump or knob; allied is the Gael. *bonnach*, a cake, a *bannock*.] Good-Friday buns were appropriately marked with the cross; hence the name. The origin of the practice is obscure; probably it is a relic of some heathen observance, to which the ancient church gave a Christian significance. At Chelsea, there were formerly two celebrated bun-houses, besieged on Good Friday from morning until night by hundreds of eager purchasers, but they have long since disappeared.

CROSSE, *kros*, ANDREW: 1784, June 17—1855, July 6; b. Fyne Court, in the Quantock Hills, Somersetshire: English experimenter on electricity. He was educated at Bristol and Brasenose College, Oxford, and in 1805–6, settled on his paternal estate, where applied himself to the study of electricity. Happening on one occasion to examine a cavern near his residence, he found reason to conclude that the crystallizations on the walls and roof were partially, at least, the effect of the operation of this subtle agency. In 1807, he commenced experiments with the view of forming artificial crystals by electricity. He took home some of the water which dropped from the roof of the cave, and exposed it to the action of a voltaic battery for ten days, when he found crystals of carbonate of lime forming on the negative platinum wire. C.'s endeavors to form crystals of various sorts were very successful. After 30 years of quiet research, during which period he remained totally unknown to the learned world, he obtained no less than 24 minerals, crystals of quartz, arragonite, carbonates of lime, lead, and copper, besides more than 20 other artificial minerals. Explaining his discoveries at the meeting held by the British Assoc. for the Advancement of Science, Bristol, 1836, he received high praise. On this occasion, he expressed his belief that every kind of mineral would yet be formed by the ingenuity of man But his most startling discovery occurred a few months after. While experimenting with some highly caustic solutions, out of contact with atmospheric air, there appeared, as if gradually growing from specks between the poles of the voltaic circuit, certain animals of the genus *acarus*. C. never affirmed that he had developed animal life out of inorganic elements,—this being neither proved by, nor necessary to account for, his experiment,—but simply that under certain physical conditions he could

make acari appear, and not otherwise. The 'discovery' made a great noise at the time. The possibility of the fact was, of course, denied by all those persons who 'take the high *priori* road,' and have made up their minds as to what facts alone are possible: but Faraday declared that he had seen, during the same year, similar appearances in his own electrical experiments. C. was accused of 'impiety,' and of being 'a reviler of our holy religion,' and though a very pious man, was compelled to defend himself against such pitiable charges, and, in spite of his defense, even lost various honors to which he was entitled. C. also invented a method of purifying sea-water by electricity, improved wines, spirits, and cider by the same process, and showed that it might be usefully applied to vegetation. An excellent memoir of him was published by his widow (1857).

CROSS-EXAMINATION: examination of a witness by counsel for the party opposing the one that called him. It has been held in some of the states that when a witness has been sworn the opposing side may cross-examine him though he has not been examined in chief or direct; while in others and in the federal courts the C.-E. is confined to matters brought out in the direct examination. Inquiry in regard to collateral facts may be made with the sanction of the presiding judge, who exercises a discretion as to the course of the examination, but such inquiry is not deemed permissible when made for the simple purpose of contradicting the witness by other evidence. A C.-E. as to matters not otherwise admissible in evidence gives to the party producing the witness the right to re-examine him in reference to those matters. Leading questions, excluded on direct examination, are allowed on C.-E. But it is a general rule that if a strictly collateral question be answered, the opposing counsel will not be permitted to call witnesses to disprove the truth of the answer.

CROSS KEYS, Battle of: 1862, June 8, in Rockingham co., Va., between the Union Gen. Frémont and the Confederate Gen. Ewell. On the withdrawal of the Confederate army from n. Va. to the peninsula, a force of 12,000 men, subsequently increased to 15,000, was left on the Shenandoah and Rappahannock under Gens. Jackson and Ewell. After Jackson's defeat near Winchester, he drove Gen. Banks to the Potomac, leaving Ewell at C. K. to watch Frémont. The latter, with 18,000 men, attacked Ewell, who had 8,000 men. The Confederates held their ground through the day, and retired at night to unite with Jackson; the whole force crossed the Shenandoah the next day and repulsed the advance of the Union Gen. Shields at Port Republic, when the Union pursuit ceased. Confederate loss 133 killed and 929 wounded; Union loss about the same.

CROSSOPODIA, *krŏs-o-pō'dĭ-a:* genus of annelids determined from markings on the surface of Silurian slates. Nothing exhibiting structure has been observed—the sur-

face of the slate is not even darkened by the organisms, which the markings show to have been nereid-like worms of some six inches in length. The extraordinary length, ascribed to this animal, has been shown to be founded on a confusion of the body with the track formed by the passage of the creature through a crisp rather than a slimy mud, the track having been filled up with dry blown dust, which gives it an appearance different from that of the surrounding matter.

CROSSOPTERYGIAN, a. *krŏs-ŏp'tėr-ĭj'ĭ-ăn* [Gr. *krossos*, a fringe; *pterugion*, a fin]: fringe-finned, applied to a family of ganoid fishes.

CROSS-RATIO, see GEOMETRY.

CROS'WELL, EDWIN: 1797, May 29—1871, June 13; b. Catskill, N. J.; journalist. He received his education in journalism on the *Catskill Recorder*, founded by his father 1790; succeeded Judge Cantine as editor of the *Albany Argus* 1823, changed it to a daily newspaper, made it a leading democratic organ, and conducted it till 1854; was state printer 1824—40 and 1840—47; retired from politics and journalism 1854, and became New York manager of an ocean steamship company.

CROS'WELL, HARRY, D.D.: 1778, June 16—1858, Mar. 13; b. w. Hartford: Prot. Episc. minister. He was editor for some time of the *Catskill Recorder;* founded the *Balance*, a Federalist organ, at Hudson, N. Y., 1802; removed to Albany and continued his political journalism, 1809; and being unable to pay the awards in numerous suits against him for libel, quitted journalism, and entered the ministry of the Prot. Episc. Church 1814. He became rector of Trinity Church, New Haven, 1815, Jan. 1; received his degree from Trinity College 1831; and published *Young Churchman's Guide*, *Manual of Family Prayers*, *Guide to the Holy Sacrament*, and other devotional works.

CROTALARIA, *krō-ta-lā'rĭ-â* [Gr. *krotalon*, a rattle]: genus of plants of the nat. ord. *Leguminosæ*, sub-ord. *Papilionaceæ*, deriving its name from the inflated pods in which the seeds rattle when ripe. The species are numerous; annual, perennial, and shrubby plants, natives of the warm parts of the world. Many of them have long, straight, slender stems and branches, and some of these yield valuable fibre, particularly *C. juncea*, the SUNN (q. v.), or Sunn Hemp of India, an annual species, the fibre of which is now an important article of commerce. JUBBULPORE HEMP, also an important fibre, and regarded as stronger than Sunn, is the produce of *C. tenuifolia*, a perennial species about nine ft. high, native of the s. of India, which, when growing in abundant space, throws out many branches; but when sown thick, grows with little branching. *C. Burhia*, which naturally grows in very arid places, is also cultivated in Sinde for its fibre; and that of *C. retusa* is employed in the Madras presidency. *C. juncea* is often sown in India, to be used in a young state for feeding cattle.

CROTALIDÆ, *krā-tăl'ĭ-dē:* family of venomous serpents, agreeing with *Viperidæ* in general form and appearance; in their large head, which is broad behind and has a short muzzle; in their short tail; and in having long fangs in the front of the upper jaw, which is destitute of other teeth; but differing from them in having a large pit—the use of which is not known—on each side of the face between the nostril and the eye; and in having the tail terminated by a sort of horny spine or by a rattle. Many of the most dangerous serpents of the warm parts of Asia and America belong to this family, which receives its name from the rattlesnakes (q. v.) [Gr. *crotalus*, a rattle] of America, and contains also the genera *Trigonocephalus*, *Craspedocephalus*, *Lachesis*, etc.

CROTCH, n. *krŏch* [F. *croc*, a hook; *crochet*, a hook, a little hook]: a hook or fork. CROTCHED, a. *krŏcht*, hooked. CROTCH'ET, n. *-ĕt*, a fixedness of the mind on some particular object or pursuit; a whim or fancy; a musical note (see MUSIC); a bracket. CROTCHETED, a. *krŏch'ĕ-tĕd*, marked with crotchets. CROTCH'ETY, a. *-tĭ*, having a tendency to fix the mind too exclusively on one object or pursuit for a time, to be in its turn laid aside for another; whimsical.

CROTCH, *kroch*, WILLIAM, MUS.DOC.: 1775–1840, Dec. 29; b. Norwich, England: musical composer. His musical genius was as precocious as that of the great Mozart. When little more than three years old, it is said that he could play *God save the King* almost throughout with chords, and the accuracy of his ear was such that he could detect in a moment what note was struck, and in what key the music was composed. At the age of 22, Crotch's abilities were so much appreciated that he was appointed prof. of music in Oxford Univ., with the degree Doctor of Music. In 1822, he obtained the principalship of the Royal Acad. of Music. He composed a large number of pieces for the organ and piano, as well as many vocal pieces. He was author of *Elements of Musical Composition and Thoroughbass*, and *Styles of Music of all Ages*, 3 vols.

CROTON, n. *krō'tŏn* [Gr. *krŏtōn*, a tick, referring to the resemblance of the seeds]: a genus of handsome plants of numerous species. CROTON'IC, a. *-ĭk*, pertaining to; denoting an acid obtained from croton-oil. CROTON'YLENE, n. *-ĭ-lēn*, a hydrocarbon of the acetylene series, related to crotonic acid.

CROTON: genus of plants of the nat. ord. *Euphorbiaceæ*, having male and female flowers generally on the same plant; the male flowers with five petals; the female flowers with three styles, which are either forked or divided into many branches; the capsules 3-celled, with one seed in each cell. The species are numerous, mostly tropical or sub-tropical trees or shrubs, a few herbaceous. Some possess in high degree the acrid properties characteristic of the order to which they belong. Among these, the most important is the PURGING CROTON (*C. Tiglium*), a small tree, a native of India and easterly tropical Asia.

The leaves are extremely acrid; the wood in a fresh state is a drastic, and in a dried state a more mild purgative; and the seeds (*C. Seeds*, or *Tilly Seeds*) are an extremely powerful drastic purgative, formerly much employed in Europe, but latterly disused on account of violence and uncertainty of action, though still valuable as yielding CROTON OIL (q.v.). They are oval, or oval-oblong, about the size of field-beans. So great is their acridity, that dangerous effects have ensued from working for some hours with packages of them. The oil is obtained mostly by expression, and partly by treating the cake with alcohol.—The wood and seeds of *C. Pavanæ* are employed in some parts of the East in the same way as those of *C. Tiglium;* and the wood is supposed to be the *Lignum Pavanæ* or *Panavæ* of commerce. Other species have similar properties. Very different are the properties of the species which yield Cascarilla (q.v.) and Copalche (q.v.) barks, to which a great resemblance exists in the barks of a number of species, natives chiefly of America. Other species are still more aromatic, and some delightfully fragrant, containing in great abundance a thickish balsamic sap. The sap of *C. gratissimus* is much employed as a perfume and cosmetic at the Cape of Good Hope; that of *C. origanifolium* is used in the W. Indies as a substitute for Balsam of Copaiva; that of *C. balsamiferum*, also W. Indian, furnishes *Eau de Mantes* by distillation.

CRO'TON AQ'UEDUCT: see AQUEDUCT.

CROTON OIL, a fixed oil expressed from the seed of *Croton Tiglium.* (See CROTON.) The seeds have been used in medicine for a great many years. The oil is a thick, viscid, pale yellowish or brownish-yellow liquid, having a slight fatty odor and an acrid burning taste. Its solubility is like that of similar fixed oils. Its composition is extremely complex, but the active principle is chiefly a glyceride of crotonoleic acid; this makes it an extremely powerful irritant, and administered to the skin it causes vesication and pustulation. Given internally it is a very active, drastic purgative and is used practically only in obstinate cases of constipation and in the insane.

CROTONA, *kro-tō'na*, or CROTON: city of Italy, founded by a colony of Achæans, B. C. 710. During a war between the inhabitants and the people of Sybaris the latter were defeated in a great battle and their city destroyed, B. C. 510. Crotona was taken by the elder Dionysius B.C. 389, by Agathocles 299, and afterward by Pyrrhus; and was seized by the Romans 277, who planted a colony there 194. It was the seat of the school of Pythagoras, and its site is now occupied by Cothrone.

CROTHOPHAGA, *krō-tŏf'a-gâ* [Gr. tick-eater]: genus of birds of the order *Scansores*, or climbers, allied to trogons and toucans, and of which some of the species are known by the names ANI and KEEL-BIRD, the former from their cry, the latter from the high, blade-like ridge which sur-

mounts the short, much compressed, arched bill The tail is fan-shaped. *C. Ani*, often called the SAVANNA BLACKBIRD, is common in the W. Indies and warm parts of America, inhabiting savannas and open pastures, parchiefly on insects, partly also on berries. It uses the sharp ridge of the bill in opening earth, dung, etc., in search of ticularly those occupied by cattle or horses, and feeding

Savanna Blackbird (*Crotophaga Ani*).

insect prey. It often perches on the backs of horses or cattle, to feed on ticks, and may be seen clinging to a cow's tail; the important service which it renders being apparently well appreciated.

CROUCH, v. *krowch* [Icel. *krokinn*, crooked, bowed down: W. *crwcau*, to bow, to curve]: to crook the body together; to stop low; to bend; to act meanly; to fawn or cringe. CROUCH'ING, imp. CROUCHED, pp. *krowcht*. CROUCHED-FRIARS, same as CRUTCHED-FRIARS: see under CRUTCH.

CROUP, n. *krôp* [F. *croupe*, hind-quarters: Icel. *kroppr*, a bump on the body (see CRUPPER)]: the hinder part or buttocks of a horse; the place behind the saddle.

CROUP, n. *krôp* [AS. *hrópan*, to call aloud: Goth. *hropjan;* Icel. *hropa;* Scot. *roup*, to call out, to cry: Gael. *crup*, to contract, to shrink]: severe and often fatal disease of infants, known from a remote period, but first scientifically described by Dr. Francis Home 1765, as a suffocative affection of the breathing, depending on the formation of a false membrane or fibrinous deposit on the mucous membrane of the windpipe or Larynx (q.v.). The inflammatory disease described by Home has been frequently confounded with a purely spasmodic affection of the larynx, the asthma of Millar, or *laryngismus stridulus* of Dr. Mason Good; and also with Diphtheria (q.v.) in which a false membrane is formed on the pharynx and palate, as

well as in the larynx. C., in the more restricted sense, begins with symptoms resembling Catarrh (q.v.), but differing in the greater degree of feverishness and hoarseness. In a short time, the respiration becomes difficult and noisy; a very peculiar hissing sound is heard accompanying the drawing of each breath; the cough is harsh and brassy; the countenance is injected, the expression very feverish and anxious, the voice entirely lost, or much altered. This state is soon followed by one of suffocation, unless the little patient is relieved by expectoration, which, however, frequently takes place in the midst of vomiting or coughing, a quantity of membranous shreds being brought up from the windpipe with glairy mucus, and sometimes streaks of blood. In the worst cases, the spasms of ineffectual coughing, and the constantly increasing obstruction to the breathing, are most painful to witness; and a period of tossing, extreme suffering, and anxiety is succeeded either by gradual insensibility, or by convulsions, soon followed by death. True C. is rarely seen after the age of puberty, and is rather uncommon before the termination of the first year of life. It may occur, however, at any age, and has essentially the same characters as are above described. It is supposed to be due in some measure to Endemic (q.v.) and partly also to Epidemic (q.v.) causes. It is most common in cold and moist climates and seasons, and in low-lying, but exposed situations. The variations in its prevalence, however, are not fully explained. The treatment of C. requires to be very active and decided, and yet free from rashness. In cases of highly inflammatory type, and in robust children, it may be proper to take blood from the arm, or to place one or more leeches (according to the age of the child) over the top of the breast-bone. An emetic should also be given as soon as possible, composed of a full dose of tartar-emetic or of ipecacuanha, or both together. Some prefer sulphate of copper given in repeated doses; in the United States, a preference is given to alum and honey mixed into a paste and given in teaspoonful doses. The emetic may be repeated, if necessary, every two or three hours, and the child should at intervals be placed in the warm bath. Medical advice should be procured without a moment's delay, for the disease is one of extreme danger, and almost all the effective remedies require experienced hands for their safe administration. In extreme cases, Tracheotomy (q.v.) has been resorted to with success.

CROUPADE, n. *krô-pād'* [F. *croupe*, the croup]: higher leaps than those of curvets, that keep the fore and hind quarters of the horse in an equal height, so that he trusses his legs under his belly without jerking.

CROUPIER, n. *krô-pēr'* [F. an assistant at a gaming-table —from *croupe*, hind-quarters, a crupper: comp. Gael. *crub*, to sit, to squat]: in *Scot.*, one who sits at the foot of the table at a public dinner and assists the chairman.

CROUT, n. *krowt* [Ger. *kraut*, a plant, a vegetable: Dan. *kruid*, a herb, cabbage]: sliced or chopped cabbage placed

in layers alternately with salt and spices, closely packed and allowed to ferment, usually called *sourcrout;* a universal article of domestic use in Germany, and called *sauer kraut.*

CROW, n. *krō* [Ger. *krähen,* to crow: L. *crocīrĕ;* F. *croasser;* Gr. *krozein,* to croak: Icel. *kraki,* a crow; *krakr,* a raven: an imitation of the cry of different birds]: a large passerine bird of a very deep blue-black color; the cry of a cock; an iron lever: V. to sing or cry as a cock, being a mark of joy or defiance; to boast in triumph. CROW'ING, imp. CREW, pt. *krô,* did crow. CROWED, pp. *krōd.* CROWBAR, a strong bar of iron used as a lever. CROW'S-BILL, in *surg.*, a kind of forceps for extracting bullets, etc., from wounds. CROW-COAL, among *miners,* earthy coal containing very little bitumen. CROW-FOOT or CROW'S FOOT, n. *krō'foot,* a wild flowering plant, the seed-vessels of which resemble the foot of a crow; the *Ranunculus* of various species, ord. *Ranunculācĕæ* (see RANUNCULUS): in a *ship,* a number of small cords rove through a long block, used to suspend an awning by, etc.: in *mil.,* a machine of iron having four points or spikes abt. 4 in. long welded together so that when laid on the ground one point is always uppermost: see CALTHROP CROWS'-FEET, wrinkles under the eyes, being the effects of age. CROW'S-NEST, a look-out or watch-tower placed on the main-topmast cross-trees, generally of a whaling-vessel. CROW-QUILL, a pen made from the quill of a crow, used for delicate writing and sketching. TO PLUCK OR PULL A CROW, to be continuous about a trifle. TO EAT CROW, to suffer defeat in a political election.

CROW (*Corvus*): genus of birds, type of the family *Corvidæ* (q.v.). The largest species of this genus is the Raven (q.v.). The Rock (q.v.) also belongs to it. Besides these and the Jackdaw (q.v.), there are found in Britain, the COMMON or CARIRON CROW (*C. corone*), and the ROYSTON CROW or HOODED CROW (*C. cornix*), differing chiefly in color, the Carrion Crow being black, the Hooded Crow gray, with black head, throat, wings, and tail. The Hooded Crow is also rather larger than the Carrion Crow, which, in size, nearly agrees with the rook, but which may readily be distinguished from that species in its having the base of the bill and the upper part of the throat not naked and rough, but closely feathered. The name Hooded Crow is derived from the appearance of the black head, contrasted with the gray body, but in some parts of Scotland is, without any show of reason, popularly transferred to the Carrion Crow, under the form *Hoody.* Both these species seldom or never associate in flocks, and not only prefer carrion to worms, insects, or vegetable food, but watch and attack very weak animals, such as young lambs. On this account, a premium is in many places given for their destruction, and gamekeepers relentlessly pursue them on account of their robbing nests, from which they take either the eggs or the helpless young. Their

own nests are built in trees, or if these are not to be found, among high rocks. They both occasionally frequent the sea-coast, feeding on shellfish, etc. Both are widely distributed over Europe and the northern parts of Asia.—The Crow of N. America (*C. Americanus*) is very similar to the Carrion Crow, but rather smaller, and, after the breeding season is over, congregates into great flocks; it is also partially migratory, great numbers from the more northerly parts moving to the south on the approach of winter. Its habits are otherwise intermediate between those of the Carrion Crow and the rook.—The Fish Crow (*C. ossifragus*) frequents the coasts and southern rivers of the United States, feeding chiefly on fish, which it catches with great dexterity. It sometimes also assails gulls, and compels them to disgorge their prey.—The Jabbering Crow (*C. Jamaicensis*) of the Blue Mountains of Jamaica is remarkable for the resemblance of its voice to human speech, which some of the other species of this genus, as the raven, it is well known, can be taught to imitate. Sir J. E. Tennent gives an interesting account of the small glossy Crow of Ceylon (*C splendens*), which frequents the towns, feeding on offal, and boldly entering rooms through open windows, to snatch some morsel from the dinner-table. Habits of pilfering are more or less prevalent among the different species of Crow. The accompanying cut of the heads of the raven (fig. 1) and the rook (fig.2) illustrates well the prevalent characters of the bill in this genus, showing also in the raven the bristles which, as in most of the species, surround its base, but which are wanting in the rook; and contrasting the greater strength of neck, head, and bill which belongs to the more carnivorous as compared with the more frugivorous species. The Red-legged Crow is the Chough (q.v.).—The name Carrion Crow is given in America to the Black Vulture: see Vulture. The Piping Crow of New South Wales is a Baritah (q.v.).

CROW'BERRY, or Crake'berry (*Empetrum nigrum*), small procumbent shrub, of the nat. ord. *Empetraceæ*, native of the northern parts of the world, abundant in the moors of Scotland and the north of England. The order consists of a few heath-like shrubs, which, however, are regarded as having a botanical affinity to *Euphorbiaceæ* (Spurges, etc.), with small unisexual flowers in the axils of the leaves, the fruit a small berry seated in the persistent calyx. The berries of the crowberry are nearly black, surround the branches in crowded clusters, and each contain 6–9 bony seeds and a watery acidulous juice, sometimes considered a refreshing drink but generally little esteemed. A fermented or vinous liquor is prepared from them in some northern countries. They are a favorite food of game. *E. rubrum*, a native of the vicinity of Cape Horn, differs little from the northern plant; except in having red berries. The berries of the Camarinheira (*Corema alba*) are used in Portugal for the preparation of an acidulous liquor as a drink in fevers.

CROWD or CROUD, n. *krowd*, or CROWTH, n. *krowth* [W. *crwth*, anything swelling out, a violin: Gael. *cruit*, a harp]: in *OE.*, a fiddle; a kind of violin; CROWDER, n., a performer on this instrument.

CROWD, n. *krowd* [W. *crwd*, a round lump: Lith. *kruwa*, a heap, as stones or people: Dut. *kruyden*, to thrust or push forward: comp. Gael. *curradh*, a crowding together—from *curr*, a small space: connected with *curd*]: a number too great for the space; a confused multitude of persons; a throng; a mob; a number of things together; the populace; [U. S. Colloq.], a clique, a gang: V. to press together; to fill to excess; to encumber with numbers; to extend to the utmost, as a ship crowds on sails. CROWD'ING, imp. CROWD'ED, pp.: ADJ. very full. CROWD SAIL, to spread all the sails widely upon the yards.— SYN. of 'crowd, n.': multitude; swarm; the vulgar; the rabble.

CROWD, PSYCHOLOGY OF THE. Social psychology considers the altered character of the individual's response to situations induced by the presence or consideration of his fellow beings; and from this position describes and analyses secondary and derivative effects upon the mental nature, that have a like 'social' origin. Within this field the behavior of the human group in masses, the mutual and reciprocal influence of one mind upon another, particularly in the presence of a strong and emotional appeal, has attracted special study under the title of the psychology of the crowd. It is well known that a pleasantry that would but arouse a smile when told to a single hearer will in a large company arouse uproarious laughter; again that the orator and the agitator directly appeal to the impulse of a crowd and the mass reaction; that fear, excitement, panic and religious fervor alike flourish under the collective support of a mass feeling. The psychology of contagion finds large historical fields in the spread of the crusades, or again of the modern revival meetings (in grosser forms leading to shouting, convulsions and ecstasy); in financial panics and such crises as the tulipomania of Holland (16) or the Mississippi bubble in France; and the minor tyrannies and vagaries of fashion. While the psychology of crowd reactions thus finds root in social response, conformity, hesitation to infringe upon social convention, it finds its most striking illustrations in the more abnormal performance of action by individuals who alone or in small groups would never succumb to such passion or folly; of this the lynching mob is the conspicuous instance. The part played by suggestion (q.v.) in the spread of mental contagion is a most prominent one; and the arguments of demagogue, agitator or fakir may be said to be practical applications of general principles of suggestive inducement, or allurement. The unwisdom of large bodies especially in deliberative council has led to the government by committee and the deputation of authority to a representative few.

CROWDIE, or CROWDY, n. *krow'dĭ* [Gael. *gruth*, curds; *gruthach*, coagulated: connected with *crowd* 2 and *crud*]:

in *Scot.*, a mixture of meal and water, or meal and milk: gruel; curds with the whey pressed out and mixed with butter.

CROWE, Catherine Ann Stevens, English author: b. Borough Green, Kent, about 1800; d. 1876. She made her first essay in literature with a tragedy, *Aristodemus* and then turned to prose fiction. *Lily Dawson* (1847) is regarded as the best of her novels. She became an ardent devotee of spiritualism and animal magnetism, and in 1852 published her most notable work *The Night Side of Nature.*

CROWE, Eyre, English historical and genre painter: b. London 1824, Oct. 3. He studied painting in the atelier of Paul Delaroche in Paris, and went with that artist to Rome in 1844. Acting as amanuensis to William M. Thackeray, he visited the United States in 1852–3. He was elected an associate of the Royal Academy in 1876. Among his paintings are *Goldsmith's Mourners* (1863); *Blue Coat Subjects* (1872); *The Rehearsal* (1876); *Sandwiches* and *Sir Roger de Coverley and the Spectator at Westminster Abbey* (1881); *The Defense of London in* 1643, exhibited in 1882; *Old Porch, Evesham* (1884). He published *With Thackeray in America* (1893).

CROWE, Sir Joseph Archer, English historian of art and miscellaneous writer: b. London 1825, Oct. 20; d. Bavaria 1896, Sept. 7. He was long eminent as a journalist, and for a time served in the British diplomatic service. His celebrity rests mainly on the *History of Painting in Italy* (1864–71), the most important work on this subject, written in collaboration with G. B. Cavalcaselle (q.v.). He also published other volumes on art subjects.

CROWE, William, English clergyman and poet: b. Midgham, Berkshire, 1745; d. Bath, Somerset, 1829, Feb. 9. He was the author of *Lewesdon Hill*, a descriptive poem, praised by Wordsworth, Coleridge, and Moore (1788); *Treatise on English Versification* (1827); etc.

CROWELL, Edward Payson, American educator: b. Essex, Mass., 1830. He was graduated at Amherst College 1853; was tutor there 1855–6; professor of German 1858–64; and of the Latin language and literature 1858 to the present time. He has edited *Selections from the Latin Poets, Catullus, Tibullus, Propertius,* etc. (1882), and with Richardson, translated Herman Bender's *Brief History of Roman Literature* (1880).

CROWELL, John Franklin, American author: b. York, Pa., 1857, Nov. 1. He was graduated at Yale 1883; was president of Trinity College, North Carolina, 1887–93; and professor of sociology and economics at Smith College, Northampton, Mass., 1895–7. He became an expert agent for the United States Industrial Commission, and since August 1900 has been expert on internal commerce in the Treasury Bureau of Statistics, Washington, D. C. He has published: *Taxation in the American Colonies; The Logical Process of Social Development;* and many con-

tributions to the *Monthly Summary of Commerce and Finance of the United States* (1900–3).

CROWEST, Frederick J., English writer, manager, and editor of the Walter Scott Publishing Company: b. London, 1856, Nov. 30. He was carefully trained in music and singing, and was for some years in the editorial employ of Cassell, Petter & Galpin, publishers. He has written *The Great Tone Poets* (1874); *Book of Musical Anecdote* (1877); *Advice to Singers* (1878); *Phases of Musical England* (1881); *Cherubini* (1890); *Musical Groundwork* (1890); *Dictionary of British Musicians* (1895); *The Story of British Music* (1895); *Verdi: Man and Musician* (1897); *Beethoven* (1899); *The Story of Music* (1902); etc.

CROWLAND, *krō′land*, or Croy′land: ancient English town in the south of Lincolnshire, on the Welland, in a low flat district in the Fens, 48 m. s.s.e. of Lincoln. Here formerly was a large abbey, built about 1200, and there still are the remains of a church founded by King Ethelwald 716. At the confluence of the Welland and the Nene is a curious triangular bridge built probably in the 14th c. on the site of an older one erected about 860. Ingulfus, the historian, was abbot of Croyland. Pop. 3,000.

CROWN, n. *krown* [F. *couronne*—from OF. *corone*, a crown: L. *corōna*, a crown: W. *crwn*, round, circular: Gael. *crun*, the boss of a shield, a garland; *cruinn*, a circle, a sphere]: a golden or ornamental circlet worn around the head; the state cap or diadem of a king or sovereign; the executive government; a wreath or garland; the top part of a thing, particularly the head; a silver coin, first issued 1527; value 5s (nearly $1.25 in U. S. currency), so named as anciently stamped with a crown: the *half-crown* also is a silver coin: V. to invest any one with regal power by the ceremony of placing the state cap or diadem on his head; to complete or finish; to reward; to dignify or adorn. Crown′ing, imp.: Adj. completing; finishing; in *mil.*, topping with works, as a crest or summit. Crowned, pp. *krownd*. Crown′less, a. without a crown. Crown-antler, topmost antler of the horn of a stag. Crown-gate, in *inland navig.*, the head-gate of a canal-lock. Crown-glass, best common window-glass, consisting of silicates of sodium and calcium, composed of sand 100, potash 35, chalk 35. Crown, imperial: see Fritillary. Crown-office, an office belonging to the court of queen's bench. Crown-piece, a strap in a bridle, head-stall, or halter, which passes over the head of a horse, its ends being buckled to the cheek-straps; an Eng. coin of the value of five shillings. Crown-post, in a building, a post which stands upright in the middle between two principal rafters. Crown-prince, a prince who succeeds to the crown or throne; the heir apparent to the throne in Germany and in Sweden. Crown-wheel, a wheel having cogs at right angles with its plane; in a watch, the wheel which drives the balance. Crown-work: in *fortifications*, a work formed to strengthen a weak front, or to occupy ground which might facilitate the enemy's operations. It consists of two faces inclined to each other at an angle, with

a bastion in the middle, and half-bastions at the two ends; and it is connected with the main body of the work by two long sides. One form of C. is shown in the annexed cut, where RMNPS is the C., in front of and protecting the ravelin O. Both of these works are entirely beyond the main ditch of the place, but each has also a ditch of its own.

CROWN: circlet, either open or closed above, worn as a decoration on the head. Crowns were originally garlands of leaves; and in this form they have probably been used as an ornament for the head by almost every people. They were much used by both the Greeks and the Latins on joyous and on solemn occasions. Among the Greeks, the C. (*stephanos*) was sometimes an emblem of office, as in the case of the archons; sometimes an ornament for the heads of victors in the public games; and sometimes a mark of distinction for citizens who had merited well of their country. Crowns of the latter class were made at first of twigs of laurel, but afterward of gold. The Romans made use of crowns to a greater extent than the Greeks, chiefly as rewards for valor. The most highly prized was the *Corona obsidionalis,* which was bestowed by a beleaguered garrison or army on the general who rescued them. It was made of grass of wild-flowers, gathered from the place which had been inclosed by the enemy. Next in order was the *Civic C.,* a garland of oak leaves and acorns, given as a reward to any soldier who had saved the life of a Roman citizen in battle. For the soldier who wore it, a place next to the senators was reserved at the public spectacles, and both the senate and the assemblage rose up on

Corona Muralis.

Civic Crown.

his entrance. Not only he, but his father and paternal grandfather were free from all public burdens; and the person whose life he had saved was bound ever after to show him the duty which a son owes to a father. The civic C. is sometimes used in heraldry.

Another of the Roman crowns was the *Corona muralis,* bestowed on him who first scaled the wall of a besieged city. It was a golden ring surmounted with turrets or battlements. It is often used in modern heraldry.

The *Corona triumphalis,* which was of three kinds, was bestowed on a general when he obtained a triumph.

But there was a totally different class of crowns, which were not honorary, but emblematical, and which were regulated not by law, like the former, but by custom. Of these, the most important were: 1. The *Corona sacerdotalis,*

worn by the priests and bystanders when engaged in sacrifice, with the exception of the *pontifex maximus*. It was sometimes of olive leaves, sometimes of ears of corn, sometimes of gold. 2. *Corona funebris* or *sepulchralis*, with which the dead was crowned, a custom among the Greeks and the Romans. A law of the Twelve Tables provided that if any one had been crowned while living, the C. should be placed on his head when carried out to burial. Crowns were placed also on the bier, and scattered from the windows under which the procession passed. In Greece, these crowns were commonly of parsley. 3. *Corona convivialis*. The custom of wearing wreaths on festive occasions, which, like most of the Roman customs, was derived from Greece, is supposed to have originated in the habit of tying a woolen fillet round the head, to mitigate the effects of intoxication. As luxury increased, they were made of such flowers and shrubs as were supposed to prevent intoxication, roses, violets, myrtle, ivy, and even parsley. 4. *Corona nuptialis* or bridal-wreath, made of flowers plucked by the bride herself, and not bought, as such purchase was of bad omen among the Romans; it was made of verbena. 5. *Corona natalitia*, a chaplet suspended over the door of the vestibule in which a child was born.

Several other classical crowns are mentioned, with these, in the very elaborate article on the subject in Smith's *Dictionary*.

As the emblem of sovereignty in modern Europe, the C. was borrowed rather from the Diadem (q.v.), than the crowns of antiquity. This decoration was originally Oriental. Alexander the Great adopted it from the kings of Persia; and Antony assumed it during his luxurious intercourse with Cleopatra. According to some, its adoption for the gods originated in the fillet, which was assigned to Bacchus for the purpose mentioned as that which led to the use of the convivial crown. In modern states, crowns were of very various forms, till heralds devised a regular series of them to mark the various gradations of sovereignty, from that of the emperor down to what are now called the coronets of counts and barons. The pope also had his triple crown: see TIARA. So entirely was the C. regarded as the symbol of sovereignty, that the word came often to be used as synonymous with the monarchy—a sense in which we still speak of the C. of England, and the domains and possessions of the crown.

The crowns of kings and emperors are closed above, while the coronet of a noble is merely an open circlet surrounding the head; hence, *to close the C.* has been the ambition of princes desirous of shaking off the authority of feudal superiors, and assuming a complete sovereignty.

The royal C. of Great Britain is a circle of gold enrich with stones and pearls, and heightened with four crosses pattée, and four fleurs-de-lis alternately. From these rise four arch-diadems, adorned with pearls, which close under a mound, ensigned with a cross pattée. The C. used at the

coronation of Queen Victoria was adorned in accordance with the taste of the present time.

The coronet of the Prince of Wales is a circle of gold, set round with crosses pattée and fleurs-de-lis, but has only one arch, decorated with pearls, surmounted with a mound and cross, and bordered with ermine. In addition to his coronet, the Prince of Wales has a cognizance consisting of three ostrich feathers, argent, quilled or, enfiled with a prince's coronet of the last, with an escrol azure, whereon are the German words *Ich dien* (I serve). For the traditionary origin of this badge, see PRINCE OF WALES.

The younger sons and brothers of the sovereign wear as coronet a circle of gold, bordered ermine, heightened with fleurs-de-lis, crosses pattée, and strawberry leaves alternately. Nephews of the blood-royal have strawberry leaves on their coronets, where the sons and brothers have fleurs-de-lis. Princesses-royal have a circle of gold, bordered with ermine, and heightened with crosses pattée, fleurs-de-lis, and strawberry leaves alternately. For the coronets of the different orders of nobility, see their *titles*.

THE CROWN is a term often employed to signify the state, and the matters under control of the executive authority. Thus, in the interests of the state there are C. ministers, C. lawyers, C. officers, C. lands, etc.—the term, in no instance, having any special connection with the sovereign personally. In Scotland, certain high crimes are technically called Pleas of the Crown. These are four in number—murder, robbery, rape, and wilful fire-raising. Likewise, in Scotland, there is a functionary styled C. agent, taking charge of criminal proceedings.

CROWN DEBTS, in England: debts due the crown, and recoverable by a summary process called an *extent*, on the theory that the crown's prerogative gives it precedence over all other debtors. The rule in Scotland, however, is limited to movable or personal property, and the crown has no privilege over a subject in a competition for heritage, though its privilege obtains as opposed to the landlord's Hypothec (q v.). Mercantile sequestration has no effect against the crown. The sanctuary of Holyrood House affords no protection to the king's debtor. See EXTENT: EXCHEQUER.

CROWNER, n. *krown'ẽr:* old and proper, though not usual, spelling of CORONER, which see.

CROWNET, n. *krown'ĕt*, in *OE.*, a little crown; a coronet.

CROWN LANDS: demesne lands of the crown. In Britain these are now contracted within narrow limits, having been almost entirely granted away to subjects. King William III. so impoverished the crown in this manner, that an act was passed, the effect of which and of subsequent statutes is, that all grants or leases from the crown of royal manors, or other possessions connected with land, for a period exceeding 31 years, are void. At a much earlier period (1455), a Scottish statute had rendered the consent of parliament necessary to the alienation

of the property of the crown; but neither it, nor the subsequent statutes passed with a similar object, succeeded in checking the practice: see WOODS AND FORESTS.

CROWN POINT: post village in N. Y., on the w. side of Lake Champlain, about 75 m. n. of Albany. Being within the basin of the St. Lawrence, it formed part of French Canada. With the view of bridling the English on the s., it was made the site of a fort famous in the American war, but of which the ruins only remain. The immediate neighborhood is now a township with a pop. of abt. 3,000.

CROWN SOLICITOR, in England: the solicitor to the treasury, who, in state prosecutions, acts as solicitor, for the crown in preparing the prosecution. In Ireland, there are crown solicitors attached to each circuit, whose duties correspond in some degree to those of the procurators-fiscal (q.v.) and crown agents in Scotland: see CROWN. In England, there are no analogous officers, and prosecutions are consequently conducted by solicitors appointed either by the parish, or by private parties bound over by the magistrates to prosecute. But in cases of great importance to the public, such as unusual or monstrous crimes, it is of frequent occurrence that the solicitor to the treasury takes charge of the case and instructs counsel.

CROWS, *krōz*, or ABSAROKA: nation of American Indians of the Dakota family, divided into the Kikatsa, Ahnahaway, and Allakaweah tribes, and many years located in the neighborhood of the Yellowstone, Big Horn, and Tongue rivers. They made treaties with the govt. 1825, 51, 66, and 68; have generally been peaceably inclined, though frequently swindled; and are noted for skill in hunting, length of hair, the cleanliness of their reservation, and their progress in agriculture and civilization.

CROW-STONE: top stone of the gable-end of a building: see CORBIE STEPS.

CROWTHER, *krō'thėr*, SAMUEL ADJAI, Anglican bishop: b. Ochegu, east of the kingdom of Dahomey, 1812; d. Africa, 1891, Dec. 31. He was the first negro bishop of the Church of England. He was carried into slavery in 1821, but was freed, with a large company of his countrymen, by a British man-of-war in 1822, and landed at Sierra Leone, where he soon became an excellent scholar. He finished his education in England, where he took orders in the English Church in 1843, and accompanied the first and second Niger expeditions, publishing a narrative of the latter. In 1864, he was ordained Bishop of the Niger, and filled that place with honor. He published several books in and on the Niger languages and ranks high among African linguists.

CROYDON, *kroy'don* [Fr. *croie dune*, chalk-hill]: town in the n.e. of Surrey, England; on the London and Brighton railway, 10½ m. s. of London Bridge. It lies on the edge of the chalk and plastic clay, near the Banstead Downs, at the source of the Wandle. Croydon was one of the first

towns in England to grapple effectually with the question of the economical disposal of town-sewage. In 1868, owing to the rapid growth of the town, new waterworks were completed. The water, which is of great purity, is from an artesian well. There are 7 railway stations at Croydon, from which about 200 trains are dispatched daily. The archbishops of Canterbury had a palace here till 1750. This palace is now a factory, and the summer seat of the archbishops is at Addington, 4 m. e. of Croydon. About a mile from Croydon is Addiscombe House, former residence of the first Earl of Liverpool, but purchased by the E. India Co. 1809. When enlarged by other buildings, it became a military acad., at which cadets were educated for the artillery and engineer services of the company. At a later date, the infantry cadets also received their professional education there. Pop. (1901) 133,885.

CROZET ISLANDS, *krozā':* volcanic group s. of the Indian Ocean; almost on a line between the Cape of Good Hope and the s. end of New Zealand. They are all of volcanic origin, and the most easterly of them, called East Island, has precipitous cliffs on the coast, and in the interior lofty peaks, exceeding 4,000 feet. The largest, called Possession Island, was visited by the Challenger expedition in 1873–4.

CROZIER, John Beattie: English philosophical writer: b. Galt., Ont., 1849, April 23. Graduated from the University of Toronto 1872 as M.D. and removed to London, England, where he practiced his profession when not devoted to work along lines of philosophical literature and research which won him high and permanent reputation; his works include: *God or Force; The Religion of the Future; Lord Randolph Churchill; A Study of English Democracy; Civilization and Progress; The History of Intellectual Development—on the lines of modern evolution.*

CROZIER, William, American military officer: b. Carrollton, Ohio, 1855, Feb. 19. He was graduated at the United States Military Academy in 1876; served for three years in the West, taking part in the campaigns against the Sioux and Bannock Indians; was instructor of mathematics at the Military Academy in 1879-84, when he entered the ordnance department; and was commissioned captain in 1890. He invented a wire-wrapped rifle and a 10-inch gun, and with Gen. Buffington, the disappearing gun carriage. He took part in the Spanish-American war; and was appointed chief of ordnance with the rank of brigadier-general in 1901, November.

CROZIER THEOLOGICAL SEMINARY: Baptist institution named from its founder, John Price Crozier (b. Springfield, Penn., 1793); in Chester, Pa., 14 m. s. of Philadelphia; founded 1868. The first edifice, designed by Mr. Crozier for a school of general education, cost $45,000, and was converted to its present use by the removal thither of the theol. dept. of the univ. at Lewis-

burg. Besides the main building, there are a library (20,000 vols.), a large hall, and a gymnasium. The founder was a resident of Philadelphia, acquired wealth chiefly in cotton manufacture, and removed to Upland in 1847. After his death his widow and children largely increased the endowment fund. The library has a fund of $30,000.

CROZOPHORA, n. *krōz-of'ėr-a:* genus of plants, ord. *Euphorbiaceæ*, tribe *Crotoneæ*.

CRUCIAL, a. *krô'shĭ-ăl* [F. *crucial;* It. *cruciale*, crucial —from L. *crucem*, a cross]: in *surg.*, passing across; intersecting; in form of a cross; severe; trying. CRU'CIATE, a. *krô'shĭ-āt*, in *bot.*, in the form of a cross. CRU'CIATED, a. *-ā-tĕd*, tormented. CRU'CIA'TION, n. *-ā'shun*, torture; exquisite pain. CRUCIF'EROUS, a. *-sĭf'ėr-ŭs* [L. *fero*, I bear]: in *bot.*, pertaining to an order of plants, the CRUCIF'ERÆ, *-ėr-ē* (q. v.), having the four petals of the flower in the form of a cross. CRU'CIFORM, a. *-si-fawrm* [L. *forma*, a shape]: in *bot.*, consisting of four equal petals disposed in the form of a cross.

CRUCIAN, *krô'shĭ-an* or *krô'shan* (*Cyprinus carassius*): fish of the same genus with the Carp (q. v.), from which it differs in the lack of barbules at the mouth, in the much greater depth of body, and in the almost square tail. It attains considerable size, and is excellent for food. It inhabits lakes, ponds, and slowly flowing rivers, in the n. of Europe and of Asia. It is called *Karussa* in Sweden. It is found rarely in the Thames, and is called *German Carp*.

CRUCIBLE, n. *krô'sĭ-bl* [F. *creuset*, a little earthen pot: but connected with mid. L. *crucĭb'ŭlum*, a hanging lamp, a melting-pot—from L. *crucem*, a cross, as formerly marked with a cross]: a vessel used in chemistry and the arts for containing substances that are to be subjected to high temperatures. A good crucible should be capable of withstanding great and sudden changes of temperature without fracture or disintegration; it should not be attacked by the substance it is to contain; and it should be infusible at the temperatures to which it is to be exposed. Numerous materials are used in the manufacture of crucibles, each having its own peculiar advantages and disadvantages. Platinum is an ideal material for many purposes, but it is exceedingly expensive, and it cannot be used for the fusion of metals. Clay, or a mixture of clay with sand, graphite, or old broken crucibles, is a favorite material, and Hessian crucibles, composed of equal parts of clay and sand, are in very general use. They are porous, they fracture easily from sudden changes in temperature, and they will not withstand the action of litharge; but they are cheap, and will not fuse at any temperature that is attained in ordinary operations. Graphite is used to a considerable extent in the manufacture of crucibles, especially for those that are to be used for melting metals.

Lime crucibles, cut from blocks of well-burned lime, are practically infusible, but they will not stand exposure to air for any length of time, since they absorb moisture, becoming converted into calcium hydrate, and then disintegrating. Magnesia crucibles are also practically infusible, and are not affected by exposure to the air. A mixture of equal parts of magnesia and bauxite (q.v.) makes excellent crucibles. Alumina (oxide of aluminum) is also highly recommended as a material for crucibles, as it will withstand sudden changes of temperature quite well, it is practically infusible for all ordinary purposes, and is not attacked even by melted sodium.

CRUCIFER, n. *krō'si-fer*, (L. *crucem*, a cross, *fero*, bear or carry); a cross-bearer in Church functions.

CRUCIFERÆ, *krô-sif'ėr-ē* [Lat. cross carrying (see CRUCIAL)]: important nat. ord. of exogenous plants, including about 1600 known species, and corresponding with the class *Tetradynamia* of the Linnæan system: see BOTANY. The flowers have a calyx of four sepals, which fall off after flowering; and a corolla of four petals, placed in the form of a cross—whence the name Cruciferæ—and alternate with the sepals. There are six stamens; four long in opposite pairs, and two short between the pairs of long ones. The ovary is superior, and there are two stigmas. The fruit is either long and podlike (a *silique*), or a short and roundish *pouch* (*silicule*); one-celled, or (usually) spuriously two-celled, by the parietal placentæ (see PLACENTA) meeting in the middle and forming a kind of Dissepiment (q.v.); and contains either one seed, or many in a single row. Linnæus divided his class *Tetradynamia* into the orders *Siliquosa* and *Siliculosa*, according to the form of the fruit, and these may be regarded also as forming suborders of this nat. ord.; but another division has recently been adopted, founded on the character of the Cotyledons (q.v.), and the manner in which the radicle is folded upon them (cotyledons *accumbent*, *incumbent*, or *conduplicate*). The general character of the order is antiscorbutic and stimulant, with more or less acridity. It contains many plants extensively cultivated for the food of man and of domestic animals, or valuable in medicine, as kale (cabbage, cauliflowers, broccoli, colewort, etc.), turnip, rape, radish, cress, horse-radish, scurvy-grass, mustard, sea-kale, gold of pleasure, etc. The dye-stuff called Waod is produced by a plant of this order. It includes also a number of garden-flowers highly esteemed for their beauty and fragrance, as wallflower, stock, rocket, etc. The pungency and acridity of the Cruciferæ seem to depend on a volatile oil, or on different volatile oils of very similar character, present in various degree in different species, or in the same species under different circumstances, and in different parts of the same plant. This diversity is well illustrated in the common turnip; in the different qualities of the

root, as to sweetness and acridity, in different soils or seasons, and in the difference between the flesh and the rind. The seeds of the Cruciferæ contain a fixed oil, which is extracted from some (rape, colza, in Europe; *Myagrum sativum* and *Erysimum perfoliatum* in Japan), to be used as a lamp-oil and in the arts, and the oil-cake is valuable for feeding cattle. The plants of this order belong mostly to the temperate parts of the world, and abound particularly in Europe. Comparatively few are found within the tropics.

CRU'CIFIX: cross with the effigy of Christ fixed to it. The principal crucifix in Rom. Cath. Churches stands in the centre of the high-altar. It overtops the tapers and is removed only at the elevation of the host. In well-appointed Rom. Cath. churches, the altar crucifix is generally either of gold or silver. Crucifixes are used in Lutheran churches and in Prussia they are often of Berlin iron. The crucifix began to take the place of the plain cross first in the time of Constantine, but was never publicly acknowledged by the Greek Church, and did not come into general use in the East till toward the end of the 8th c. It was not till the Carlovingian age that it became general in the Latin Church. On the earlier crucifixes Christ is represented as alive, with open eyes, and generally clad, and fastened with four, not three nails, and with the nimbus of glory round the head. In later times, all these circumstances varied. Christ was often represented as dead, naked, except a cloth round the loins, and fastened with three nails; i.e., the two feet fastened together by one nail. The earlier artists usually represented the figure of Christ as haggard, and his countenance as sorrowful in the last degree; but latterly the custom was introduced of representing him as the ideal of human beauty, and of throwing into his countenance an expression of rapture and heavenly joy. See Cross.

CRUCIFIX, CRUCIFIED, etc.: see under Crucify.

CRUCIFY, *krô'sĭ-fī* [F. *crucifier*—from mid. L. *crucĭfĭcārĕ* for *crucĭfigĕrĕ;* It. *crucifiggere,* to crucify—from L. *crucem,* a cross; *figo,* I fix; *fixus,* fixed]: to put to death by nailing to a cross, the body being in this way suspended; to repress and subdue evil passions and desires from love to Christ. Cru'cifying, imp. Cru'cified, pp. *-fīd.* Cru'cifier, n. one who. Crucifix, n. *krô'sĭ-fĭks* [F.—L.]: a figure in wood, metal, or other substance, representing Christ fastened to the cross. Cru'cifix'ion, n. *fĭk'shŭn* [F.—L.]: the act of nailing to the cross; the punishment of death by the cross. The Crucifixion, n. the death of Christ by the cross.

CRUD, *krŭd,* and Cruddle, *krŭd'l,* same as Curd and Curdle, which see.

CRUDE, a. *krôd* [L. *crudus,* bloody, raw: W. *crau,* blood: comp. Gael. *cruaidh,* hard, stiff—connected with *cruel*]: in a raw, unprepared state; rough; imperfect:

clumsy; hasty; not matured. CRUDE'LY, ad. *-lĭ*. CRUDE'NESS, n. CRUDITY, n. *krô'dĭ-tĭ*, rawness.

CRUDEN, *krô'dĕn*, ALEXANDER: 1700, May 31—1770, Nov. 1; b. Aberdeen, Scotland. He was educated at Marischal College, with a view to the ministry, but having exhibited decided symptoms of insanity, he was for some time kept in confinement. On his release, he left Aberdeen, and after spending several years as a tutor, settled in London, 1732, first as a corrector of the press, afterward as a bookseller. In 1737, appeared his *Complete Concordance of the Holy Scriptures of the Old and New Testament*, a really great work, which has laid divines especially under deep obligations to the laborious author. The book was dedicated to Queen Caroline, who graciously promised to 'remember him,' but unfortunately died a few days after. Cruden now relapsed into insanity, and his friends were obliged to remove him to a private asylum, where he appears to have been harshly treated. On his recovery, he published an account of his sufferings. For the next 15 years he acted as a corrector of the press, but, in 1753, he had again to be put under restraint for a few days. Cruden now believed himself divinely commissioned to reform the manners of the world, and styled himself Alexander, *the Corrector*. He went about the country exhorting the people to keep holy the Sabbath day, etc. He also petitioned the king for the honor of knighthood, and the parliament to constitute him by act, 'the Corrector of the People,' hoping by such honors to influence the people more effectually. Several other foolish things were done by Cruden in the course of his life; nevertheless his many benevolent actions shed a pleasing light over his melancholy career. Cruden died at Islington. There have been a multitude of editions and abridgements of Cruden's *Concordance* published both in Britain and America.

CRUDY, a. *krôd'ĭ* [from CRUD]: in *OE.*, coagulated. CRUDY, a. *krô'dĭ* [from CRUDE]: in *OE.*, raw.

CRUEL, a. *krô'ĕl* [F. *cruel*, cruel, fierce—from L. *crudēlis;* It. *crudele* (see CRUDE)]: having pleasure in inflicting pain or sufferings on others; barbarous; inhuman; extremely unkind; hard-hearted; merciless. CRU'ELLY, ad. *-lĭ*. CRU'ELTY, n. *-tĭ*, inhumanity; disposition to inflict sufferings; also CRU'ELNESS, n. in OE.—SYN. of 'cruel': savage; pitiless; brutal.

CRUELS, also CREWELS, n. plu. *krô'ĕls* [F. *crouelles*, the king's evil]: in *popular language*, the scrofulous disease of the glands of the neck; scrofula.

CRUET, n. *krô'ĕt* [F. *cruchet*, a little cruse; *cruche*, a pitcher, a jug: Dut. *kruik*, a pitcher: Gael. *criot*, an earthen bottle (see CROCK and CRUCIBLE)]: a small flint-glass bottle, containing for immediate use a sauce, pepper, mustard, and the like.

CRUIKSHANK, *krûk'shank*, GEORGE: 1792, Sep. 27—1878, Feb. 1; b. London: gifted pictorial satirist. His

father was a native of Aberdeenshire, and his grandfather had fought for Prince Charles Stuart at Culloden. Cruikshank at first thought of the stage as a profession; but some of his sketches having come under the notice of a publisher, he was induced to engage in the illustration of children's books and songs. When about 20 years of age, a publication, called *The Scourge*, afforded scope for his satiric genius, and from that time he pursued with remarkable success this his true vein. His illustrations for Mr. William Hone's political squibs and pamphlets attracted much attention, and sent some of them through no less than 50 editions. But these political caricatures, many of which were personal, were not altogether to Cruikshank's taste. Nor, indeed, in this narrow party field did he find verge for the full exhibition of his rich fund of humor and depth of moral sarcasm. He consequently abandoned this style about 1824. In *Points of Humor*, and the designs for *Grimm's German Tales*, *Tom Thumb*, *Peter Schlemihl*, *Punch and Judy*, *My Sketch-Book*, *Boz*, *Oliver Twist*, and the *Comic Almanac*, his comic genius first found ample manifestation; while in his *Sunday in London*, his *Gin-Shop*, *The Upas Tree*, and especially *The Bottle*, he showed himself a moral teacher possessed of a grim Hogarthian earnestness and force. *The Bottle* consisted of a series of eight large-sized plates representing the various stages in a drunkard's career; and through temperance societies, and by its own merits, the work has had enormous circulation. As a water-colorist he left work marked by masterly and delicate skill. In his late years Cruikshank applied himself to oil-painting, and in this department showed perhaps more humor, fervor, and inventive ability than artistic power (see his *Life* by Blanchard Jerrold, 1882). Several of his oil-paintings have been popular and have been engraved—as *A Runaway Knock*, *Disturbing the Congregation*, and *The Worship of Bacchus*. The list of his works amounts to 5,500.

CRUISE, n. *krôz* [Dut. *kruissen*, to cross, to cruise—from *kruis*, a cross: F. *croiser*—from *croix*, a cross—from L. *crux* or *crŭcem*, a cross—the cross being the badge of the seamen who in former times carried on naval warfare against the infidels]: a crossing backward and forward, as on the sea; a voyage among places, or from place to place: V. to cross or traverse; to sail from place to place or within certain parts of a sea for a particular purpose, as for war or protection of commerce. CRUI'SING, imp.: N. the act of voyaging for observation, pleasure, or practice: ADJ. pertaining to. CRUISED, pp. *krōzd*. CRUISER, n. *krô'zėr*, a ship of war cruising; usually a small vessel sailing about in some defined portion of sea, watching an enemy: see CORSAIR.

CRUISE, n. *krôz*, a cup: see CRUSE.

CRUITHNE' [L., *Cruithnii*, *Cruthini*]: name given, from the 6th to the 9th c., to a people who inhabited the s. half of the county Antrim, and the greater part of the county

Down, and at one time established themselves also in the county Meath, in Ireland. They were otherwise called Dalaradians, and their country, Dalaradia. Their name of Cruithne is supposed to be derived from the Celtic *cruit*, color, and to have been applied to them because they painted or tattooed their skins.

CRULLER, n. *krŭl′lẽr*, [D. *krullen*, to curl]: a ring-shaped cake of dough fried brown in boiling lard.

CRUMB, also CRUM, n. *krŭm* [AS. *crume*, a crumb: Gael. *criom*, a bite, a nip: Ger. *krume;* Dut. *kruime;* Dan. *krumme*, a crumb, pith]: a small part or fragment; the soft part of bread, as distinguished from the crust. CRUMB′ING, imp. CRUMBED, pp. *krŭmd*. CRUMBLE, v. *krŭm′bl*, to break or fall into small pieces; to molder; to perish. CRUM′BLING, imp, *-bling*. CRUM′BLED, pp. *-bld*. CRUM′MY, a. *mĭ*, inclined to go to crumbs; soft: V. to break into crumbs.

CRUMMELL, ALEXANDER, American colored Episcopal clergyman: b. New York, 1819, March 3; d. Point Pleasant, N. J., 1898, Sept. 9. His father was a native African and his mother a free woman. He received his education at the Oneida Institute, and in 1839 applied for admission to the General Theological Seminary. His request was refused owing to the intense prejudice against the higher education of the negroes. He accordingly went to England in 1849 and graduated at Cambridge University in 1853. He engaged in missionary work in Liberia 1853–73, when he went to Washington, D. C., and founded St. Luke's Church, of which he was rector until 1895. In 1897 he organized the American Negro Academy in New York. He published: *The English Language in Liberia* (1861); *The Future of Africa.* (2d ed. 1862); *Africa and America* (1891).

CRUMMY, a. having crumbs; soft like bread crumb.

CRUMP, a. *krŭmp* [Sw. *krumpen*, shrunk: AS. *crump*, bowed, bent: Ger. *krumm;* W. *crwm*, bending, crooked]: crooked. CRUMP-BACK, hump-back. CRUMPLE, v. *krŭm′pl*, to contract; to shrink: to press in folds or wrinkles; to rumple. CRUM′PLING, imp. CRUM′PLED, pp. *-pld;* CRUMPY, a. *krŭm′pĭ*, easily broken, brittle.

CRUMPET, n. *krŭm′pĕt* [Bret. *krampoez*, a pancake (see CRUMB)]: a kind of cake or muffin; very thin bread.

CRUNCH, v. *krŭnsh* [see CRAUNCH]: to crush between the teeth.

CRUPPER, n. *krŭp′pẽr* [F. *croupière*, a crupper—from *croupe*, the ridge of the back, the rump of a horse]: a strap of leather buckled to a saddle, and which passes under the horse's tail, prevents the saddle from slipping forward on the horse's neck: V. to put a crupper on. CRUP′PERING, imp. CRUP′PERED, pp. *-pẽrd*.

CRURAL, a. *krô′răl* [mid. L. *crurālis*, of or pertaining to the shin or leg: L. *crura*, the legs: Sks. *cri*, to go, to run]: of or belonging to the legs. CRURA, n. plu. *krô′ră* [L.]: in *bot.* the legs or divisions of a forked tooth.

CRUSADES, n. plu. *krō-sādz* [F. *croisade*, a crusade—from Prov. *cruzada*—from *croz*, a cross—from L. *crucem*, a cross: Sp. *cruzada*]: military expeditions of the western Christian nations in the middle ages for the recovery of the Holy Land from the Saracens, the soldiers wearing the figure of the cross, or having banners with crosses on them. CRUSADE′, n. *-sād′*, a romantic undertaking. CRUSA′DER, n. *-sā′ dėr*, one who. CRUSA′DING, a. pertaining to. CRUSA′DO, n. *-dō*, a Portuguese coin, so called from the figure of the cross stamped upon it.—The first crusade was undertaken simply to vindicate the *right* of Christian pilgrims to visit the Holy Sepulchre. On the conquest of Palestine, however, the *object* of the C. changed, or at least enlarged, and the efforts of the subsequent crusaders were directed to the rescue of the whole land from the Saracens, who had repossessed themselves of it. From an early period in the history of the church, it was considered a pious act to make a pilgrimage to the Holy Sepulchre, and to visit the various spots which the Savior had consecrated by his presence. When Palestine was conquered by the Arabs in the 7th c., that fierce but generous people respected the religious spirit of the pilgrims, and allowed them to build a church and a hospital in Jerusalem. Under the Fatimides of Egypt, who conquered Syria about 980, the position both of the native Christian residents and of the pilgrims became less favorable; but the subjugation of the country, 1065, by brutal hordes of Seljuk Turks from the Caucasus rendered it intolerable. These barbarians, but recently converted to Mohammedanism were nearly as ignorant of the Koran as of the Scriptures. They hardly knew their fellow-religionists, and are said to have wreaked their vengeance on the Mussulmans of Syria, as well as on the Christians. The news of their atrocities produced a deep sensation over the whole of Christendom. The first to take alarm were, naturally enough, the Byzantine monarchs. In 1073, the Greek emperor, Manuel VII., sent to supplicate the assistance of the great pope, Gregory VII., against the Turks, accompanying his petition with many expressions of profound respect for his Holiness and the Latin Church. Gregory—who beheld in the supplication of Manuel a grand opportunity for realizing the Catholic unity of Christendom—cordially responded; but circumstances prevented him from ever carrying his vast designs into execution, and the idea of a crusade died gradually away. It was, however, revived by his successor, Urban II., an able and humane man, whose sympathies were kindled by the burning zeal of Peter the Hermit, a native of Amiens, in France, who had made a pilgrimage to the Holy Land, witnessed the cruelties perpetrated by the Turks, and was now traversing Europe, preaching everywhere to crowds in the open air, and producing the most extraordinary enthusiasm by his impassioned descriptions of how pilgrims were murdered, robbed, or beaten, how shrines and holy places were desecrated, and how nothing but greed restrained the ruffian Turks (who made the Christians pay heavy taxes for their visits to Jerusalem) from

destroying the Holy Sepulchre, and extirpating every vestige of Christianity in the land. As soon as the feelings of Europe had been sufficiently heated, Urban openly took up the question. Two councils were held in 1095. At the second, held at Clermont, in France, a crusade was definitely resolved on. The pope himself delivered a stirring address to a vast multitude of clergy and laymen, and as he proceeded, the pent-up emotions of the crowd burst forth, and cries of *Deus vult* (God wills it) rose simultaneously from the whole audience. These words, *Deus vult*, by the injunction of Urban, were made the war-cry of the enterprise, and every one that embarked in it wore, as a badge, the sign of the cross; hence the name *Crusade*.

First Crusade.—From all parts of Europe, thousands upon thousands hurried at the summons of the pope to engage in the holy war. 'The most distant islands and savage countries,' says William of Malmesbury, 'were inspired with this ardent passion. The Welshman left his hunting, the Scotchman his fellowship with vermin, the Dane his drinking party, the Norwegian his raw fish.' It is said that in the spring of 1096 not less than 6,000,000 persons were in motion toward Palestine. This, however, must be a huge exaggeration. What we do know positively is, that previous to the setting out of the great hosts of European chivalry, four armies—if disorderly and anarchic multitudes, the mere dregs and refuse of Christendom, deserve that name—amounting in all to 275,000 persons, had departed for Palestine. The first consisted of 20,000 foot, and was commanded by a Burgundian gentleman, Walter the Pennyless. It marched through Hungary, but was cut to pieces by the natives of Bulgaria, only a few, among whom was Walter himself, escaping to Constantinople. The second, consisting of 40,000 men, women, and children, was led by Peter the Hermit. It followed the same route as its predecessor, and reached Constantinople greatly reduced. Here the two united, crossed the Bosporus, and were utterly defeated by the Turks at Nice, the capital of Bithynia. A third expedition of a similar kind, composed of 15,000 Germans, led by a priest named Gottschalk, was slaughtered or dispersed in Hungary; which also proved the grave of the *fourth*, a terrible horde, consisting of about 200,000 wretches from France, England, Flanders, and Lorraine, who had swept along through Germany, committing horrible ravages, especially against the Jews, whom they murdered without mercy. *Now*, however, the real crusaders made their appearance: the gentry, the yeomanry, and the serfs of feudal Europe, under chiefs of the first rank and renown. Six armies appeared in the field, marching separately, and at considerable intervals of time. Their respective leaders were Godfrey of Bouillon, Duke of Lorraine; Hugh the Great, Count of Vermandois, and brother of Philippe, king of France, Robert Curthose, Duke of Normandy, the son of William the Conqueror; Count Robert of Flanders; Bohemond, Prince of Tarentum, son of the famous Guiscard,

under whom was Tancred, the favorite hero of all the historians of the crusade; and lastly, Count Raymond of Toulouse. The place of rendezvous was Constantinople. The Greek emperor, Alexius, afraid that so magnificent a host—there were in all not less than 600,000 men, exclusive of women and priests—might be induced to conquer lands for *themselves*, cajoled all the leaders, excepting Tancred and Count Raymond—into solemnly acknowledging themselves his liegemen. After some time spent in feasting, the crusaders crossed into Asia Minor (accompanied by the unfortunate Peter the Hermit). Here their first step was the siege and capture of Nice, the capital of Sultan Soliman, 1097, June 24. This monarch was defeated also by Bohemond, Tancred, and Godfrey, at Dorylæum. Baldwin, brother of Godfrey, now crossed into Mesopotamia, where he obtained the principality of Edessa. After some time, the crusaders reached Syria, and laid siege to Antioch. For seven months the city held out, and the ranks of the besiegers were fearfully thinned by famine and disease. Many even brave warriors lost heart, and began to desert Melancholy to relate, among the list of cowards was th poor enthusiast who had planned the enterprise. Peter wa actually several miles on his way home when he was overtaken by the soldiers of Tancred, and brought back to undergo a public reprimand. At length, 1998, June 3, Antioch was taken, and the inhabitants were massacred by the infuriated crusaders, who were in their turn besieged by an army of 200,000 Mohammedans sent by the Persian sultan. Once more famine and pestilence did their deadly work. Multitudes also deserted, and escaping over the walls, carried the news of the sad condition of the Christians back to Europe. But again victory crowned the efforts of the besieged. 1098, June 28, the Mohammedans were utterly routed, and the way to Jerusalem opened. It was on a bright summer morning (1099) that 40,000 crusaders, the miserable remnant of that vast array which two years before had laid siege to Nice, obtained their first glimpse of Jerusalem. The emotion was intense, the scene sublime. On July 15, after a siege of rather more than five weeks, the grand object of the expedition was realized. Jerusalem was delivered from the hands of the infidel. Eight days after the capture of the city, Godfrey of Bouillon was unanimously elected king of Jerusalem. His kingdom, at first comprising little more than the mere city of Jerusalem, was gradually extended by conquest until it included the whole of Palestine. A language resembling Norman French was established, a code of feudal laws drawn up—Jerusalem was erected into a patriarchate, and Bethlehem into a bishopric. The best part of Asia Minor was restored to the Greek empire, while Bohemond became Prince of Antioch. For nearly 50 years, the three Latin principalities or kingdoms of the East—Edessa, Antioch, and Jerusalem—not only maintained themselves against the attacks of the Mohammedans of Egypt and Syria, but greatly increased in size, power, and wealth. At Jerusalem were founded the two

famous orders of the Knights Hospitallers of St. John and the Knights Templars.

Second Crusade.—In 1144, the principality of Edessa was conquered by the emir of Mosul, and the Christians slaughtered. His son, Noureddin, advanced to destroy the Latin kingdoms of Syria and Palestine. Europe once more trembled with excitement. A second crusade was preached by the famous St. Bernard, Abbot of Clairvaux, in Champagne; and early in 1147 two enormous armies, under the command of Louis VII., king of France, and Conrad III., emperor of Germany, marched for the Holy Land. Their united numbers were estimated at 1,200,000 fighting-men. The expedition, nevertheless, proved a total failure. The Greek emperor, Manuel Comnenus, was hostile; and through the treachery of his emissaries, the army of Conrad was nearly destroyed by the Turks near Iconium, while that of Louis was wrecked in the defiles of the Pisidian mountains. After a vain attempt to reduce Damascus, the relics of this mighty host returned to Europe.

Third Crusade—The death-blow, however, to the kingdom of Jerusalem, and the power of the crusaders was given, not by Noureddin, but by Salah-Eddin, commonly called Saladin, a young Kurdish chief, who had made himself sultan of Egypt, and who aspired to the presidency of the Mohammedan world. He invaded Palestine, took town after town, and finally, 1187, Oct., compelled Jerusalem itself to capitulate, after a siege of 14 days. The news of this led to a third crusade, the chiefs of which were Frederick I. (Barbarossa), emperor of Germany, Philippe Auguste, king of France, and Richard *Cœur-de-Lion*, king of England. Barbarossa took the field first in the spring of 1189, but accidently lost his life by fever caught from bathing in the Orontes. His army, much reduced, joined the forces of the other two monarchs before Acre, which important city was immediately besieged. In vain did Saladin attempt to relieve the defenders; and after a beleaguerment of 23 months, the place surrendered. But the crusaders were not united among themselves. Philippe soon after returned to France; and Richard, after accomplishing prodigies of valor, which excited the admiration of the Saracens, concluded a treaty with Saladin, by which 'the people of the West were to be at liberty to make pilgrimages to Jerusalem, exempt from the taxes which the Saracen princes had in former times imposed.' This, as has been previously noticed, was *all* that had been claimed by the *first* crusaders. 1192, Oct. 25, Richard set sail for Europe.

Fourth Crusade.—Crusading unfortunately now became a constituent of the papal policy; and in 1203 a fourth expedition was determined upon by Pope Innocent III., though the condition of the Christians was by no means such as to call for it. It assembled at Venice, but how entirely secular crusading had become, will be seen from the fact, that the army never went to Palestine at all, but preferred to take possession of the Byzantine empire. The

leader of this host of *pseudo-crusaders*, Baldwin, Count of Flanders, was seated on the throne of the East in 1204, where he and his successors maintained themselves for 56 years

Fifth Crusade.—This was commanded by Frederick II., emperor of Germany. It began 1228, and terminated in a treaty between that monarch and the sultan of Egypt, by which Palestine was ceded to Frederick, who, after being crowned king of Jerusalem, returned to Europe, leaving his new possessions in a state of tranquillity.

Sixth Crusade.—In 1244, a new race of Turks burst into Syria, and once more the Holy Land fell into the hands of these ferocious barbarians. Jerusalem was burned and pillaged. In 1249, Louis IX. of France (St. Louis) headed a crusade against them, but was utterly defeated, and taken prisoner by the sultan of Egypt. By the payment of a large ransom he obtained his liberty, and that of the other prisoners. On his return to Europe, he was regarded as a sort of martyr in the cause of Christ.

Seventh Crusade.—This also was primarily undertaken by St. Louis, but he having died at Tunis in 1270, on his way to Palestine, Prince Edward of England, afterward Edward I., who had originally intended to place himself under the command of St. Louis, marched direct for Palestine, where his rank and reputation in arms gathered round him all who were willing to fight for the cross. Nothing of consequence, however, was accomplished; and Edward soon returned to England the last of the crusaders. Acre, Antioch, and Tripoli still continued in the possession of the Christians, and were defended for some time by the Templars and other military knights; but in 1291 Acre capitulated, the other towns soon followed its example, and the knights were glad to quit the country, and disperse themselves over Europe in quest of new employment, leaving Palestine in the undisturbed possession of the Saracens.

Effects of the Crusades.—While we cannot help deploring the enormous expenditure of human life which the C. occasioned, it is impossible to overlook the fact that they indirectly exercised a most beneficial influence on modern society. They secured for humanity certain advantages which probably would not have been otherwise obtained. Guizot, in his *Lectures on European Civilization*, endeavors to show their design and function in the destinies of Christendom. 'To the first chroniclers,' he says, 'and consequently to the first crusaders, of whom they are but the expression, Mohammedans are objects only of hatred; it is evident that those who speak of them do not know them. The historians of the later crusades speak quite differently; it is clear that they look upon them no longer as monsters; that they have to a certain extent entered into their ideas; that they have lived with them; and that relations, and even a sort of sympathy, have been established between them.' Thus the minds of both, particularly of the crusaders, were partly delivered from those prejudices which are the offspring of ignorance. 'A step was taken

toward the enfranchisement of the human mind.' Secondly, the crusaders were brought into contact with two civilizations, richer and more advanced than their own—the Greek and the Saracenic; and it is beyond all question that they were mightily struck with the wealth and comparative refinement of the East. Thirdly, the close relationship between the chief layman of the West and the church, occasioned by the Crusades, enabled the former 'to inspect more narrowly the policy and motives of the papal court.' The result was very disastrous to that spirit of veneration and belief on which the church lives, and in many cases an extraordinary freedom of judgment and hardihood of opinion were induced—such as Europe had never before dreamed of. Fourthly, great social changes were brought about. A commerce between the East and the West sprang up, and towns—the early homes of liberty in Europe—began to grow great and powerful. The Crusades, indeed, 'gave maritime commerce the strongest impulse it had ever received.' The united effect of these things, again, in predisposing the minds of men for a reformation in religion, has often been noticed. Other causes undoubtedly co-operated, and in a more direct and decisive manner, but the influence of the Crusades in procuring an audience for Luther, cannot be overlooked by the philosophic historian.

CRUSADES, Children's: expeditions undertaken by boys exclusively, with some vague, enthusiastic purpose of the conversion or the conquest of the Moslems. The first was preached and organized 1212 by Stephen, a French shepherd-boy of Vendome, who collected 30,000 boys and embarked with them at Marseilles for the Holy Land in three vessels, two of which were lost in a storm with all on board, and the children on the third, reaching the Holy Land, were sold as slaves to the Saracens. Another was organized by Nicholas, a German boy, who gathered 20,000 juvenile pilgrims and led them from Cologne across the Alps at Mont Cenis. A second German expedition of about the same numbers crossed the Alps and reached Brindisi. A third, confined to the city of Erfurt, began 1237, July 15, when 1,000 boys started for Armstadt, where their parents overtook them and led them home. In 1458 a company of 100 boys set out from Halle and reached Mount St. Michael in Normandy. Many of the crusaders turned back from homesickness, thousands perished on their journey, and the rest became slaves in strange countries.

CRUSCA, Academia della: see Academy.

CRUSE and Cruise, n. *krôz* [Icel. *krus;* Ger. *krus;* Dut. *kroes*, a cup, a drinking-vessel: F. *cruche*, a jug, a cruse (see Crucible and Crock)]: a small cup; a small bottle. Cruset, n. *krô'sĕt*, a goldsmith's melting-pot.

CRUSH, v. *krŭsh* [a word imitative of the noise of crushing a hard or brittle body: OF. *croissir* and *cruisir*, to crack or crash: Sw. *krysta;* Icel. *krcista*, to squeeze, to

pinch: It. *crosciare*, to crush: Lith. *kruszti*, to grind]: to press and bruise between two hard bodies; to beat or force down; to subdue; to overwhelm by superior power or weight; to conquer; to be pressed into a smaller compass: N. a collision; a violent pressure, as of a crowd. CRUSH'ING, imp.: ADJ. pressing into a mass; overwhelming. CRUSHED, pp. *krŭsht:* ADJ. broken or bruised by pressure or by a fall. CRUSH'ER, n. one who or that which. CRUSH CUP, in *OE.*, to empty a cup by drinking its contents.—SYN. of 'crush, v.': to press; squeeze; bruise ; pound; beat; overwhelm; overcome; ruin; oppress.

CRUSH'ERS, or BRUIS'ERS: implements for reducing to small fragments corn, beans, linseed, oil-cake, and other similar hard food of horses, oxen, or hogs, that it may be more thoroughly digested. Seeds which enter the stomach with their husk or outer pellicle unbroken, often resist its powers, so that they contribute nothing to nourishment; and this is the case often with corn given to old horses; but even wth perfect mastication the previous crushing of hard food is useful. Crushers generally consist of toothed, grooved, or otherwise roughened cylinders, revolving so as to bruise the food either against each other, or against a fixed plate of similar roughness. CLOD-CRUSHER is an agricultural implement, a toothed or roughened roller: see ROLLER.

CRUSIUS, CHRISTIAN AUGUST, German theologian and philosopher: b. Leuna, near Merseburg, 1715, Jan. 10; d. Leipsic, 1775, Oct. 18. He received his education at Leipsic, where later he became professor of theology, a position which he held until his death. He vigorously attacked the philosophy of Leibnitz and Wolf as being incompatible with the dogmas of the Christian Church, and at the same time put forth his own philosophy, which he claimed to be perfectly orthodox. His philosophy gave to the soul faculties and liberties almost as limitless as those of the Deity; propounded psychology as the basis for logic; and regarded time and space as modes of divine existence and not as substances.

CRUST, n. *krust* [OF. *cruste*—from L. *crusta*, the shell of anything; imitative of the sound of crunching a crust of bread: Ger. *kruste*, a crust: Bohem. *chraustati*, to crunch]: the outward covering or shell of anything, generally harder than the body itself; the outer portion of the earth; the rind of bread; the coating of a pie; the tartar deposited from wine on the bottle, evidence of age, the wine being then called *crusted:* V. to cover with a crust; to harden the outside of a thing. CRUST'ING, imp. CRUSTED, pp. *krŭst'ed.* CRUSTA'CEA, n. plu. *-tā'shĭ ă*, also CRUSTA'CEANS, n. plu. *-shĭ-ănz*, a general name for all kinds of animals with jointed shells, as the crab, lobster, etc. CRUSTA'CEAN, a. *-shĭ-ăn*, pertaining to; having jointed shells. CRUSTA'-CEOUS, *ă-tā'shŭs*, pertaining to; of the nature of crust or shell; in *bot.*, hard, thin, and brittle. CRUS'TATED, a. *tā-tĕd*, covered with a crust. CRUSTA'TION, n. *-tā'shŭn*. an

adherent crust. CRUSTY, a. *krŭs'tĭ*, hard; covered with a crust or shell. CRUSTED PORT, port which has completed its fermentation in bottle, known by the deposition of a crust inside the bottle.

CRUSTA'CEANS (*Crustacea*): class of articulated animals, agreeing with insects, arachnida, and myriapoda in having articulated limbs; but differing from them in important respects, and particularly from all of them in the adaptation of the organs of respiration to an aquatic life, even those of them which live on land being generally inhabitants of damp places, and breathing by a kind of gills. Some of the lowest and minute aquatic crustacea, indeed, are not provided with gills; but the aëration of the blood is supposed to take place through the surface of the body.

The crustacea derive their name from the hard armor which in most of them covers the whole body, forming for it that sort of framework which is sometimes, not very correctly, called an external skeleton; and which, in those of highest organization, is very complex in its structure, and contains a large amount of calcareous matter—carbonate and phosphate of lime, so that it is in its substance intermediate between shell and bone—while in many of the lower and smaller kinds it consists principally of *chitine*, and corresponds more nearly in its nature with the integuments of insects. The body of a crustacean is composed of rings (see ARTICULATA), generally 21 in number, and the crustaceous covering corresponds with it in this respect; the rings, alike of the body and its armor, being in some cases very distinct, while in others some of them in a great measure coalesce or are consolidated together, of which the thorax of a crab is an excellent example. The first seven rings are regarded as forming the head; the next seven, the thorax; and the remainder the abdomen, corresponding with the head, thorax, and abdomen of insects. The crustaceous covering is considered as a peculiar epidermis, having beneath it a true skin, from which it is an inorganic exudation; and, like the epidermis, it is cast off from time to time, that its place may be supplied anew, as the growth of the animal requires more room for the internal soft parts. In this *moulting*, or casting of the shell, the animal divests itself of its covering not in separate parts, but in one piece, including the coverings of the limbs, and even of the antennæ, although the membranes which connect the hard places are split and torn. A period of apparent sickness precedes, and agitation accompanies, the process; and the thick muscular parts of the limbs of crabs and lobsters become soft and flaccid, so as to be much more easily extricated from their hard coverings. The loss of a limb, which sometimes takes place on such an occasion, and is otherwise a frequent occurrence, is easily repaired, for a new one grows in its stead; but it is noticeable that in order to this reproduction, the limb must be broken off at a particular joint, the second from the body, thus leaving only a short stump;

and when a limb is broken elsewhere, the animal itself exercises the remarkable power of throwing it off by this joint.

The principal organ of locomotion in many crustaceans, as in the lobster, shrimp, etc., is the abdomen, terminating in fan-like appendages; by bending the abdomen suddenly down under the thorax, they dart *backward* in the water. In some, the limbs—which are connected with the thoracic rings are organs of swimming; those of others are used for walking at the bottom of the water or on dry ground. Some have what are called *false legs* or *pro-legs* attached to the abdomen, often very different from the thoracic legs. The legs of some are fitted for burrowing. The first pair of legs is frequently transformed into a pair of powerful claws or pincers—the last joint but one being prolonged so as to oppose the last joint, which becomes attached as to the side of it; and these are used for seizing and tearing food. In many crustaceans the limbs of the first thoracic rings are organs still more intimately connected with the mouth, and have received the name of foot-jaws, the transition from the true mandibles and maxillæ to the organs of locomotion being often very gradual. The mouth of some small parasitic crustaceans, however, is formed for sucking, and not for tearing and masticating food. The digestive organs are very simple in all; there is a short but capacious gullet, a large stomach, and a straight and simple intestinal tube. The pyloric region of the stomach is furnished with a remarkable apparatus of hard tubercles or sharp teeth for grinding or tearing food, supplementary to the external organs of the mouth. Almost all of the crustacea feed on animal food, and they are very voracious. A few feed on vegetable food. The nervous system of crustaceans agrees generally with that of insects, and exhibits many gradations of division and concentration. Crustaceans, in general, appear to possess all the five senses. Their eyes are either simple (stemmatic), aggregate (consisting of several stemmata under a common cornea), or compound. The compound eyes are often on foot-stalks. The gills are variously placed; in the internal cavity, under the *carapace*—the enlargement of the plate of a single ring, which covers the thoracic rings in crabs, etc.; on the thoracic limbs; on the abdominal or false legs, etc. The heart is always in the middle line, and distributes the blood by arteries through the system; but the blood returns to venous *sinuses*, from which it is sent into the gills, and thence to the heart again. The sexes are distinct in most of the crustaceans; and they are all oviparous.

The crustacea are one of the most instructive of all groups to the comparative anatomist, on account of the extraordinary degree of differentiation, sometimes progressive, sometimes retrogressive—which they exhibit from the primitive segmented type. Their development is if possible even more remarkable, frequently exhibiting a series of metamorphoses rivalling in completeness those

of insects, almost in all cases leading back to a single primitive unsegmented six-limbed form, the *Nauplius* embryo (fig. 1), and furnishing the ultimate key to the affinities of the group. Thus the free swimming copepod cyclops and its numerous parasitic relatives, the branchiopods, the 'multivalve' cirripedes, and barnacles, the ancient Silurian trilobites, and even some of the highest forms (Decapoda), leave the egg as a nauplius. The prawn *Penæus* leaves the egg as a *naulius*, moults into a *cyclops* form, thence into a *schizopod* stage, and finally assumes its adult state; while the crab quits the egg in a *cyclops* state. The so-called *Zoea*, fig. 1, thence passes at once into the prawn stage, fig. 2, and finally into the adult form, the developmental history being here much more condensed The great majority of crustacea are marine; some belong to fresh water, a few are terrestrial.

CRUST OF THE EARTH: outside solid covering of our planet. It has been the theory of geologists and is still believed by many, that the interior of the earth is a fiery molten mass; but man has been able to penetrate but a short way into the crust, and he cannot conclusively reason on his observations made at or near the surface, regarding the condition of the crust to a greater depth than a few miles, at the most ten; all beyond is little more than guess-work. The materials of the crust are not thrown confusedly together, but distinct mineral masses are found to occupy definite spaces, or to exhibit a certain order of arrangement. These may be classified in reference to their origin, as Aqueous or Igneous; or to their age, as Primary, Secondary, and Tertiary.

CRUSTY, a. *krŭs'tĭ* [from CURST, which see]: abrupt in manner or speech; ill-tempered. CRUS'TILY, ad. *-tĭ-lĭ*. CRUS'TINESS, n. *-tĭ-nĕs*, the quality of being crusty; peevishness; moroseness.

CRUT, n. *krŭt* [contracted from CRUST]: the rough shaggy part of oak-bark.

CRUTCH, n. *krŭch* [Ger. *krücke;* Dut. *kruck;* Sw. *krycka;* Lith. *kruke*, a crutch: It. *croccia*, a little cross, a crutch: mid. L. *crocia*, a crutch—from *croca*, a crook (see CROOK)]: a staff having at one end a crook or curve for the armpit; a support for the lame in walking; old age: V. to support on crutches. CRUTCH'ING, imp. CRUTCHED, pp. *krŭcht:* ADJ. distinguished by wearing the symbol of the cross, as the *'crutched-friars';* properly *crossed-friars*, of which *crutcheā-friars* is a mere corruption. This order appeared in England in the 13th c., and had monasteries in London, Oxford, and Reigate. A street in London bears their name.

CRUVELLI, *krô-vĕl'lē*, SOPHIE (Baroness VIGIER): b. Bielefeld, Prussia, 1824, Aug. 29: vocalist. She received her musical education in Paris, made her first professional appearance in Germany, sang with great success in London, Milan, Venice, and other cities, married Baron Vigier 1856, and retired from the stage. She possessed a strong,

pure soprano voice and high dramatic powers, and for many years was the most popular of vocalists. She received from Ahmed Pasha, son of Mehemet Ali, money and diamonds aggregating 2,000,000 francs.

CRUX, n. *krŭks* or *krôks* [L., plu. *cruces*]: a cross: fig., anything exceedingly difficult to explain; the Southern Cross—name of a constellation of the southern hemisphere.

CRUYS, *kroyz*, Cornelis: 1657, June 14—1727: founder of Russian maritime power. He was a rear-admiral in the Dutch service when, 1698, Peter the Great persuaded him to become vice-admiral in Russia. To Cruys Russia owed its first dockyards, canals, and charts, the organization of its navy, and its victories over Sweden and Turkey 1708–10. After a short period of disgrace, Cruys was received back to favor. He died possessor of an imperial domain in Kexholm and owner of the island Birken in Finland.

CRUZ, *krôth*, or *krôs*, Juana Ines de la, Mexican poet: b. 1651, Nov. 12; d. 1695, April 17. Retiring from the vice-regal court at the age of 17, she became a nun of the Hieronymite order, and devoted herself to poetry, music, and mathematics, leading at the same time a life of great austerity. Her writings consist of songs, dramas (all these except two on religious themes), prologues, and dramatic sacred allegories. Her contemporaries styled her 'the Tenth Muse' and 'the Mexican Phœnix.'

CRUZ, San Juan de la, (Saint John of the Cross), Spanish mystic and poet: b. Fontiveros, Old Castile, 1542; d. Ubeda 1591, Dec. 14. He was a Carmelite friar, canonized in 1674. His prose writings on the inner life won for him the title 'The Ecstatic Doctor;' famous among them is *The Soul's Darksome Night*. His complete *Spiritual Works* were first published in 1619, and in a 12th edition in 1703.

CRUZ Y GOYENECHE, *krôs-ē-gō-yā-nā-chā*, Luis de la, Chilean military officer: b. Concepcion, 1768, Aug. 25; d. near Valparaiso, 1828, Oct. 14. He bore a leading part in the revolution against Spain, commanding a regiment and falling into the hands of the enemy, but was liberated in 1817. He next became a political leader of the young republic, serving for a time as acting president of Chile. He was invested by Peru with the dignity of grand marshal.

CRY, v. *krī* [imitative of a shrill sudden exertion of the voice: It. *gridare;* F. *crier;* Ger. *schreien*, to cry and weep: L. *quirĭtārĕ*, to shriek, to cry: comp. Gael. *craidh*, to pain, to cause to cry]: to utter a sound as in pain or distress; to speak or call loudly; to utter a voice in weeping or sorrow; to lament; to squall as a child; to proclaim: N. the utterance of a loud noise; lamentation; clamor; popular agitation and outcry; acclamation; noise of hounds on the scent. Cries, n. plu. *krīz*, loud sounds uttered by any animal; vocal sounds; loud sounds in lamentation or weeping; clamor; bitter complaints; street announcements. Crying imp. *krī′ĭng:* Adj. uttering a squalling noise, as a child;

calling for notice; notorious. CRIED, pp. *krīd*. CRIER, n. *krī'ẽr*, one who; a public officer who makes announcements or proclamations. TO CRY AGAINST, to utter a loud voice by way of reproof or threatening. TO CRY OUT AGAINST, to complain of or censure strongly. TO CRY OUT, to exclaim. TO CRY DOWN, to depreciate. TO CRY UP, to praise or extol. TO CRY TO, to call on in prayer; to implore.—SYN. of 'cry, n.': uproar; exclamation; outcry; vociferation; tumult; shouting; bawling; utterance; proclamation.

CRYOLITE, n. *krī'ō-līt* [Gr. *kruos*, ice, hoar-frost; *lithos*, a stone]: a mineral, double fluoride of aluminium and sodium ($_3NaF.Al_2F_3$), found in the gneiss of w. Greenland; important as a source of the metal aluminium (q.v.). In the flame of a candle it melts like ice. It crystallizes in the monoclinic system, and also occurs massive. It is transparent or translucent, and the purer varieties are colorless or white. Its lustre is vitreous, and it has a hardness of 2.5 and a specific gravity of about 3. The best-known deposit of cryolite is in West Greenland, whence large quantities of it have been taken for use in the preparation of metallic aluminium (q.v.). Less important deposits are also known in the Urals, and in El Paso County, Col. Cryolite is also used in the manufacture of alum, soda, and certain kinds of glass, notably the so-called 'milk-glass.'

CRYOPHORUS, n. *krī-ōf'ō-rŭs* [Gr. *kruos*, ice, hoar-frost; *phoreō*, I bear]: apparatus for freezing water by its own evaporation. The instrument consists of a glass tube with a bulb at both ends. A little water is present in one of the bulbs, and when the second bulb, containing only water-vapor, is placed in a freezing mixture, the vapor condenses, which causes more vapor to rise from the water in the first bulb. The result of this vaporization from the first bulb is the abstraction of much heat, and ultimately the remaining water passes into a frozen state.

CRYPT, n. *krĭpt* [L. *crypta;* Gr. *kruptē*, a vault, a concealed subterranean passage—from Gr. *krupto*, I conceal: F. *crypte*]: underground vaulted part of a church or other great building; sometimes a vault or cell, either entirely or partly underground. Crypts in churches do not generally extend beyond the limits of the choir or chancel, and they are often of much smaller dimensions. Crypts were formerly used as chapels, and provided with altars and the other furniture requisite for the celebration of religious services; and they were also frequently used as places of sepulture. It sometimes happens that a new church has been erected over the crypt belonging to the old one. One of the largest crypts in England is that under Canterbury Cathedral; but there are few finer specimens of the crypt anywhere than that under Glasgow Cathedral, recently freed from rubbish and restored. Crypts seem to have originated in the customs of the early Christian ages; the tombs of the martyrs were first used as churches, and then churches were built above them. CRYPTIC, a. *krĭp'tĭk*, or CRYP'TICAL, a. *-tĭ-kăl*, pertaining to; hidden; secret. CRYP'TOS

a. *-tŏs*, in *bot.*, inconspicuous or concealed; in composition, *crypto.*

CRYPTA, n. *krĭp'ta*, CRYPTÆ, n. plu. *krĭp-tē* [L.]: in *anat.*, tubular or saccular simple gland; in *bot.*, one of the receptacles of oily secretion in the leaves of the *Aurantiaceæ* (Oranges), the *Myrtaceæ* (Myrtle-blooms), and various other orders of plants.

CRYPTANDRA, n. *krĭp-tăn'dra* [Gr. *kruptos*, hidden; *anēr*, gen. *andros*, a man; by botanists used for a stamen]: Australian genus of under-shrubs, order *Rhamnaceæ.* They look like heaths. About 70 are known.

CRYPTICUS, n. *krĭp'tĭ-kŭs* [Gr. *kruptikos*, fit for concealing—from *kruptō*, I conceal]: genus of beetles, family *Tenebrionidæ.*

CRYPTO-CALVINISM, i.e. *hidden* Calvinism: term applied to certain opinions supposed to be held by Melanchthon and others who strove to promote harmony between the followers of Luther and those of Calvin. Melanchthon, the chief author of the Augsburg Confession (q.v.), afterward published a revised edition of it in which he left out a clause that condemned the Genevan doctrine concerning Christ's spiritual presence in the sacrament of the Supper. On this account he was charged with secretly favoring an opinion contrary to the Lutheran view. But his gentle disposition and strenuous efforts to secure harmony among Protestants render it probable that, without adopting Calvin's opinion, he thought it was not sufficiently erroneous to exclude believers from communion with Christ, and therefore ought not to be positively condemned. Luther neither sanctioned the alteration, nor quarrelled with Melanchthon on account of it. Yet the controversy to which it gave rise continued during the peace-loving reformer's life, and with increasing violence for 50 years after his death. During this time repeated efforts were made to crush the supposed Calvinism by imprisoning the leading men who were charged with favoring it; and, one of them, Chancellor Nicolas Crell, was, in 1611, put to death. Afterward the chief distinction between the orthodox Lutherans and the Reformed churches of Germany continued to be adherence to the 'unaltered' or to the 'altered' confession.

CRYPTOCEPHALUS, n. *krĭp-to-sĕf'al ŭs* [Gr. *kruptos*, hidden; *kephalē*, the head]: genus of beetles, family *Chrysomelidæ;* small insects, with the head deeply inserted into the thorax, the antennæ long and filiform, the body short and cylindrical.

CRYPTOCHILIDÆ, n. *krĭp-to-kī'lĭ-dē* [Gr. *kruptos*, hidden; *cheilos*, a lip; L. suf. *-idæ:* so named because the labellum is not easily seen on account of the contraction of the mouth of the calyx]: family of orchids, tribe *Vandeæ.* CRYPTOCHILUS, *krĭp-tŭ-kī'lŭs*, genus of orchids, typical of the family *Cryptochilidæ.*

CRYPTOCORYNE, n. *krĭp-to-kŏr-ī'nē* [Gr. *kruptos*, hidden; *korunē*, a club: so named from the shape of its flowers]:

genus of *Araceæ*. *C. ovata* is used to bring sugar to a good grain when it is too viscid and cannot be made to granulate properly by the application of lime alone. CRYPTOCORYNEÆ, *krĭp-to-kŏr-ĭ'nē-ē:* tribe of *Araceæ*.

CRYPTODONTIA, n. plu. *krĭp-to-dŏn'tĭ-a* [Gr. *kruptos*, hidden; *odous*, gen. *odontos*, a tooth]: in *zool.* and *paleon.*, in Prof. Owen's classification, the second family of the *Anomodontia*, the fifth order of *Reptilia* or Reptiles.

CRYPTOGAMIA, n. plu. *krĭp'tō-gā'mĭ-ă*, or CRYPTOGAMS, n. plu. *krĭp'tō-găms* [Gr. *kruptos*, concealed; *gamos*, marriage]: in *bot.*, one of the great divisions of the vegetable kingdom, comprising the mushrooms, lichens, mosses, sea-weeds, and ferns, the organs of fructification in which are concealed or not apparent; also CRYPTOG'AMY, n. *-tŏg'-ă-mĭ*. CRYP'TOGAM'IC, a. *-tō-găm'ĭk*, or CRYPTOG'AMOUS, a. *-tŏg'ă-mŭs*, pertaining to plants of the order *cryptogamia*. CRYPTOGAMOUS PLANTS, those which have no true flowers, and no known male or female organs of fructification, and whose seeds, called *spores*, consist only of a single cell, and contain no embryo, but germinate indifferently from any point; and which Jussieu therefore designated *Acotyledonous Plants* (q.v.). The name C. P. was invented by Linnæus, and the *Cryptogamia* form a class of his sexual system, very distinct from all the rest. See BOTANY. Many C. P. have no leaves; some have not even a root, and those which are lowest in organization consist only of a single cell. Many are parasitic. Many look as if dead in a dry atmosphere, and are revivified by rain. They are the lowest in organization of the vegetable kingdom, and are divided into *Filices* (Ferns), *Marsileaceæ*, *Lycopodiaceæ* (Club-mosses), *Equisetaceæ* (Horse-tails), *Musci* (Mosses), *Hepaticæ*, *Lichens*, *Fungi*, *Characeæ*, and *Algæ*.

CRYPTOGRAMMA, n. *krĭp-to-grăm'ma* [Gr. *kruptos*, hidden; *gramma*, a written character, or from *grammē*, a line: so called from the concealed line of capsules]: genus of ferns, order *Polypodiaceæ*, the sori at length confluent and marginal.

CRYPTOGRAPHY, *n. krĭp-tŏg'ră-fĭ* [Gr. *kruptos*, concealed; *graphē*, a writing]: the act or art of writing in secret character. CRYP'TOGRAPH'ICAL, a. *-grăf'ĭ-kăl*, pertaining to. CRYPTOG'RAPHER, n. *-tŏg'ră-fĕr*, one who. CRYPTOGRAM, n. *krĭp'tō-grăm*, a concealed meaning in any writing. CRYPTOLOGY, n. *krĭp-tŏl'ō-jĭ* [G. *logos*, a word]: the science of concealed or secret things; a secret language. CRYPTOL'OGIST, n. *-jĭst*, one skilled in secret languages or cipher-writing.—The art of secret writing, more commonly called the art of writing in cipher [from Arabic *sifr*, void] has been in use from an early date in correspondence between diplomatists and others engaged in important affairs requiring secrecy. In modern times, it has been the subject of learned care to Lord Bacon, the ingenious Marquis of Worcester, Dr. Wallis, Bishop Wilkins, Thicknesse, Falconer, Blair, etc. In British history, it has at no time been in greater requisition than during the civil

war, and among the politicians of the 17th c. And even now, when there is happily less need for mystery among statesmen, the need for a perfectly undecipherable mode of secret communication has again had to be looked for, in order that information may pass by the electric telegraph without being understood by the officials in connection with the apparatus.

One of the most simple methods of cryptography is to use, instead of each letter of the alphabet, a certain other letter at a regular interval in advance of it in that series. Such was a mode of secret writing devised by Julius Cæsar, who used the fourth letter, *d*, instead of the first, *a*, and so on. As a variety upon this plan, the alphabet is used invertedly—*z* for *a*, *y* for *b*, *x* for *c*, and so on. Or, while the first seven letters are represented by the second seven, the next six may be represented by the last six; and many other variations may be adopted. But for all modes like these, there are modes of decipherment far from difficult. It is necessary, in general, only to bear in mind certain peculiarities of the language presumed to be used. Supposing it to be English—we readily remember that *e* is the most frequent letter; that *ea* and *ou* are the double vowels which most frequently occur; that the consonants most common at the ends of words are *r*, *s*, and *t;* etc. We also know that a single letter must be either the pronoun *I* or the article *a;* that *an*, *at*, and *on*, are the most common words in two letters; that *the* and *and* are the most frequent words in three letters; etc. By taking advantage of these few obvious principles, a moderately skilled decipherer will read almost any such piece of cryptographic writing in five minutes. Newspapers often give, in advertising columns, correspondence on delicate subjects, even assignations for elopements, written in this manner, whose writers are little aware how open their secrets may become. Poe's interesting tale, the *Gold-Bug*, gives some instructive hints on the construction and decipherment of secret writings. For languages of continental Europe, see Breithaupt's *Ars Decifratoria*, 1737, and other works.

Politicians and important personages conducting affairs of difficulty became sensible long ago of the necessity of using ciphers of greater abstruseness. The celebrated letter of Charles I. to the Earl of Glamorgan, in which he made some condemning concessions (elsewhere denied) to the Rom. Catholics of Ireland, was composed in an alphabet of 24 short strokes variously situated upon a line. Other letters by the same monarch are to appearance a mere series of numbers of two and three figures, divided by semicolons. In such cases, it was necessary that the two parties in the correspondence should have previously concerted what words each number was to represent. Bacon devised what he thought a not easily penetrable cipher, in which he employed only *a* and *b*, arranging each of these, in groups of five, in such collocations as to represent all the 24 letters. Thus, *aabab ababa babba* conveyed the word *Fly*. The great philosopher thought that preconcertment

would here be necessary; but in reality any clever modern decipherer would have found no difficulty in reading any long letter composed in such a manner. The unfortunate Earl of Argyle, preparing his expedition against the tyrannical government of James II., used a mode of secret writing whch consisted in setting down the words at certain intervals, which he afterward filled up with other words, making on the whole something intelligible, but indifferent. In our day, such a mode would not have been found proof against the ingenuity of those who have studied the means of decipherment. There are many other modes of secret writing, which it does not seem necessary to detail, as the art has become little more than a matter of curiosity. Among these are the trellis or card-board cipher, wheel-cipher, string-cipher, and circle-cipher.

A good treatment of the subject is an article by Dr. William Blair in *Rees' Cyclopædia.* See also *Chambers' Journal,* No. 506 (Second Series), and Nos. 87 and 115. The best modern presentation of cryptography is J. L. Kruker's *Cryptographik.* Older treatises of value are: *Poligraphia,* by John Trithemius, Abbot of Spanheim (1500), John Baptist Porta's *De Furtivis Literarum Notis* (1563), Blaise de Vignenere's *Traitè des Chiffres* (Paris, 1587), Bp. John Wilkin's *Mercury, or the Secret and Swift Messenger* (1641), John Falconer's *Cryptomenysis Patefacta* (1685), John Davy's *Essay on the Art of Deciphering* (1737), Philip Thicknesse's *Treatise on the Art of Deciphering* (1772), C. Von Marten's *Cour Diplomatique* (4th. ed. 1851). A curiously illustrative attempt to import arbitrarily a secret meaning into a familiar writing, is Ignatius Donnelly's recent book, assuming to trace in Shakespeare's writings a cipher concealing, and revealing, the fact that not Shakespeare, but Lord Bacon was the author.

CRYPTOHYPNUS, n. *krĭp-to-hĭp'nŭs* [Gr. *kruptos,* scret, hidden; *hŭpnos,* sleep]: genus of beetles belonging to the family *Elateridæ.*

CRYPTO-JEWS: Jews who, while professing another religion, are secretly practising Judaism. The best known were the large numbers who affirmed their allegiance to the church after the persecutions in Spain towards the end of the 14th c., and who were called Maranos. The word is variously explained, either from the New Testament phrase 'maranatha,' in Spanish accursed,' or 'banned', and also 'hog.' These converts whose numbers reached over 100,000 led directly to the introduction of the Inquisition and the expulsion of the Jews from Spain. Those who were wealthy intermarried with the impoverished nobility, and even with the blood royal, although with the second generation they preferred their own sect. Through their intellect and affluence, they attained high rank in the government, church and learned professions.

They are commonly divided into three classes—the first included those without any belief in Judaism who were glad to abandon the Ghetto (q. v.) and its humilia-

tions for the new career opened to them as Christians. They lost no opportunity to ridicule their old faith so as to appear strong in their new one The second embraced men and women who retained their love for Judaism, practising in secret its observances and prepared to endure much of their inherent loyalty. The third and the largest class included those who were forced to yield by circumstance, but remained Jews in their home life, and at the first opportunity returned to their olden allegiance. These were termed 'Anusim' (compelled or constrained), and were not harshly judged by their brethren, for the latter felt that sooner or later they would return to the synagogue.

The Maranos in particular aroused the hatred of the populace, on account of their wealth and prominence, while the odium they suffered them was intensified by clerical insinuations against their sincerity. Frequent and bloody were the riots against them in Toledo, Cordova, Seville, and elsewhere in the 15th c., and their condition was rendered still more precarious by the Inquisition, whose introduction they bitterly opposed, for they foresaw its result. Forced by law to separate from their Jewish brethren, who supplied them with prayer-books and ceremonial requisites and instructed them in Judaism and its practices, their continued association led to the expulsion of the Jews in 1492, and to considerable increase in the ranks of those who sought immunity by baptism.

In Portugal, where the Maranos were very influential, they continued their religious rites in secret despite indignity and torture, and were subjected to a series of massacres, when once the Inquisition was established. Finally most of the survivors left the country, settling in the chief Italian cities, in France, Turkey, Flanders, Hamburg and Amsterdam, whence they went to Brazil, the West Indies and the American colonies. Others emigrate to what were in later times the Danubian principalities, and to Austria and Hungary. Thus the expulsion in 1492 led to a complete change in the status of the Jews, as much as the outbreaks in Russia in 1881-2, and the following years have brought about the settlement chiefly in North and South America of a million emigrants from the land of the Czar. Remnants of Marano families are still to be encountered in Spain and Portugal.

A second class of Crypto-Jews are the Chuetas, or pork-eaters of Majorca, also termed 'Ghetto people,' descendants of old-time Maranos, whose condition for nearly two centuries was pitiable, until a royal decree of 1782 which protected them from insult, gave them access to the whole island, and forbade them to be called Chuetas or Jews. Today they are industrialists and agriculturists, and occupy positions in the public service. A third sect of Maranos is termed 'Donmeh' (apostates) in Salonica. European Turkey. It is composed of descendants of the followers of Sabbatha Zebi who are outwardly Mohammedan, but observe secret rites, while in no way associating with the Jews, although they do not intermarry with the Turks.

They number about ten thousand, divided into three sects, each with its own cemetery. They are expert scribes and barbers. Another body of Crypto-Jews is found in Central Asia, with the name Yadidin. They number two thosand at Meshed, with 60 families at Merv, and others at Bokkara and Samarcand. Persecuted about 80 years ago, and with the choice given them of Islam or the sword, they became Mohammedans, but practise in secret Jewish observances. When they make a pilgrimage to Mecca they pass Jerusalem on the way and the place of wailing at the Western Wall is holier to them than the black stone of the Kibla. The Daggatuns, a nomad tribe of Jewish origin, in the Moroccan Sahara, can be classed as Crypto-Jews, being nominally Mohammedans. See Graetz's *History of the Jews.*

CRYPTOLITE, n. *krĭp'to-līt* [Gr. *kruptos,* hidden; *lithos,* stone]: an apparently hexagonal mineral occurring in acicular prisms and minute grains.

CRYPTONEMEÆ, n. plu. *krĭp-to-nē'mē-ē* [Gr. *kruptos,* hidden; *nēma,* that which is spun, yarn—from *neō,* I spin]: sub-order of algæ (sea-weeds), order *Ceramiaceæ.* CRYPTONE'MIA, n. genus of *Algæ,* the typical one of the sub-order *Cryptonemeæ* (q.v.).

CRYPTOPHAGIDÆ, n. plu. *krĭp-to-făj'ĭ-dē* [Gr. *kruptos,* secret; *phagein,* to eat]: family of beetles, order *Pentamera.* They are minute in size, and found in fungi. CRYPTOPHAGUS, *krĭp-tŏf' a-gus:* genus of beetles, typical of the family *Cryptophagidæ.*

CRYPTOPORTICUS, *krĭp-to-pōr'tĭ-kŭs,* or CRYPTOPOR'TICO [Gr. *kruptos,* hidden; L. *porticus,* a portico]: an inclosed portico or gallery, having a wall with openings or windows in it, instead of columns at the side.

CRYPTOPROCTA, n. *krĭp-to-prŏk'ta* [Gr. *kruptos,* hidden; *prōktos,* hinder parts, bottom, tail]: genus of mammals, family *Viverridæ* (q.v.).

CRYPTORHYNCHIDES, n. plu. *krĭp-to-rĭngk'ĭ-dēz* [Gr. *kruptos,* hidden; *rungchos,* snout]: according to Schoenherr, author of an elaborate work on *Curculionidæ,* this is a family of *Rhyncophora:* see WEEVIL.

CRYPTORNIS, n. *krĭp-tawr'nĭs* [Gr. *kruptos,* hidden; *ornis,* a bird]: in *paleon.,* genus of birds, founded on ornithic remains from the upper Eocene.

CRYPTOSTEGIA, n. plu. *krĭp-to-stē'gĭ-a* [Gr. *kruptos,* hidden; *stegē,* a roof]: in *zool.,* family of *Foraminifera* with a perforate test, in the classification of Ruess; in *bot.,* a genus of twining *Asclepiadaceæ.*

CRYPTOTÆNIA, n. *krĭp-to-tēn'ĭ-a* [Gr. *kruptos,* hidden; L. *tænia;* Gr. *tainia,* a band]: genus of *Umbellifera. Cryptotœnia canadensis* (Honewort) is the only species described.

CRYPTOTHECII, n. plu. *krĭp-to-thē'sĭ-ī* [Gr. *kruptos,* hidden; *thēkē,* a box, a chest]: small group of *Muscaceæ* (Mosses). Type *Spiridens.*

CRYPTURIDÆ, n. plu. *krĭp-tūr′ĭ-dē* [Gr. *kruptos*, hidden; *oura*, tail]: in the classification of Prince Bonaparte, family of gallinaceous birds, type *Crypturus*. CRYPTURINÆ, *krĭp-tūr-ī′nē*, sub-family of *Tetraonidæ*. CRYPTURUS, *krĭp-tūr′ŭs:* genus of gallinaceous birds, by Swainson and others placed under *Tetraonidæ*, and by some made the type of a sub-family *Crypturinæ*, but by Prince Bonaparte elevated into a family, *Crypturidæ*.

CRYSTAL, n. *krĭs′tăl* [F. *cristal*— from L. *crystallum*, rock-crystal: Gr. *krustallos*, ice, rock-crystal—from *kruos*, frost: It. *cristallo*]: a regular solid bounded by symmetrical faces, meeting each other at definite angles; anything congealed like ice with smooth surfaces; any natural body transparent or semi-transparent; a transparent substance made by fusing certain bodies together, as an alkali with flint or sand and lead; a fine kind of glass: ADJ. consisting of crystal; clear; transparent. CRYS′TALLINE, a. *-līn*, like crystal; clear; transparent. CRYS′TALLIZE, v. *-līz*, to cause to form into crystals; to be converted into crystals. CRYS′TALLI′ZING, imp. CRYS′TALLIZED, pp. *-līzd*. CRYS′TALLI′ZABLE, a. *-lī′zā-bl*, that may be formed into crystals. CRYS′TALLIZATION, n. *-zā′shŭn*, the act or process of being formed into crystals. CRYS′TALLI′ZER, n. *-lī′zėr*, he who or that which. SUB-CRYSTALLINE, indistinctly or faintly crystalline. ROCK-CRYSTAL, transparent or colorless quartz. CRYSTALLINE LENS OR HUMOR, a white, transparent, firm substance having the form of a convex lens, situated in the anterior part of the vitreous humor of the eye: see EYE.

CRYS′TALLINE ROCKS: all rocks having a crystalline structure. They belong to every division of the crust of the earth, but are abundant especially in the most ancient azoic rocks; the greater proportion of intruded igneous rocks also possess this structure. When attempting in the laboratory to produce crystals, it is known that the building material must be in a fluid condition, and this is obtained either by heating to fusion or by solution. It has been asserted that all C. R. have been produced under similar circumstances; and no one can doubt that lavas and more ancient rocks having similar origin, have assumed this structure while solidifying from a condition of igneous fusion, while rock-salt is as certainly obtained from a saturated solution of salt. There are, however, many rocks, such as some fossiliferous limestones, in which this structure occurs, where it is not possible to conceive of their being in either condition. It is known that crystallization takes place in solid material, as in the axles of railway carriages, or in the crystals of pyrites in the chalk, where the iron has been gathered from the surrounding material while in a solid state. We know not what is the force that induces such a change in solid materials; it may be called metamorphic or molecular action, but these are names that merely hide our ignorance. That such a force, inducing crystalline structure in amorphous masses, has been and is now at work on the solid strata of the earth, cannot be doubted.

CRYSTALLOGRAPHY, n. *krĭs'tăl-lŏg'ră-fĭ* [Gr. *krustallos,* ice, rock-crystal; *graphĕ,* a writing]: that department of mineralogy which investigates the relation of crystalline forms, and the origin and structure of crystals. CRYS'TALLOG'RAPHER, n. one who. CRYS'TALLOGRAPH'IC or CRYS'TALLOGRAPH'ICAL, a. pertaining to. CRYS'TALLOGRAPH'ICALLY, ad. *-kăl-lĭ.* CRYS'TALLOID, a. *-loyd* [Gr. *eidos,* form]: having the form or likeness of a crystal; that is able to crystallize—opposed to *colloid:* N. that which has the form or likeness of a crystal. CRYSTALLOMANCY, n. *krĭs'tăl lō-măn'sĭ* [Gr. *manteia,* divination]: ancient sort of divination by means of translucent stones, the beryl being deemed most effective. The operator first muttered over it certain formulas of prayer, and then gave it into the hands of a youth or virgin—none others were pure enough to discern its revelations—who beheld in it the information required. It was believed that sometimes the desiderated facts appeared written on the crystal, and that sometimes the spirits invoked appeared in the crystal to answer the questions. CRYSTAL'LO-CERAMIC, n. *-se-răm'ĭk* [Gr. *keramos,* potter's clay, earthenware]: a kind of glass incrustation. It consists of an opaque substance imbedded in a mass of colorless glass. CRYSTAL'LO-ENGRAVING, a mode of impressing arms or badges upon a glass vessel in intaglio, produced by pressure of the heated glass against a hot die in the process of blowing.

CRYSTALLOG'RAPHY: department in mineralogy which concerns the classification of crystalline forms, and the origin and structure of crystals. A crystal is a piece of matter that, by the action of molecular forces, has assumed a definite geometrical form of some kind, with plane faces. There is great variety of crystalline forms, each form being characteristic of one or more substances. The great majority of substances are capable of undergoing the process of crystallization, the exceptions being principally complex organic substances which tend to assume a globular or spherical form approaching that of organized structures. The most favorable condition for the crystallization of any substance is from its solution in water or other liquid. A liquid usually dissolves more of a salt when warm than when cold; and when a warm saturated solution is allowed to cool, a portion of the salt deposits itself in crystals. This process is that generally followed in the crystallization of saline substances. A second process resorted to in the case of the metals, such as bismuth, antimony, etc., and sulphur, is to fuse the material in a vessel, and when it is cooled down so as partially to solidify the mass, the crust is broken through, and the liquid still remaining is poured off, when a net-work of crystals is obtained. A third method is to vaporize the substance, which on condensation resolves itself into crystals. Examples of this class are the formation of snow crystals from the water-vapor in the atmosphere, and the minute black crystals of iodine obtained by allowing its vapor to condense in a cold vessel or on a cold surface.

Many circumstances affect the crystallizing power of substances. Thus, water may be cooled down below its

freezing or crystallizing point (32° F.), provided it be kept perfectly still, without becoming solid; but on subsequent agitation, it instantly crystallizes. Similarly, a hot saturated solution of sulphate of soda, or glauber salt, if cooled down in a still place, does not crystallize, but immediately does so when the liquid is agitated, or a fragment of any solid substance is introduced into it. The size of the crystals obtainable from any fluid depends much on the rate of cooling, and the state of commotion of the liquid. The more slowly the solution cools down, and the more quietly the process of crystallization is allowed to proceed, the larger are the crystals obtained; while, when the liquid is rapidly cooled, and agitation is kept up, the crystals are comparatively small, and generally not completely formed. The reason of this is, that a large crystal is constructed of a multitude of smaller crystals, built up regularly so as to constitute a compound crystal of the same form as the more minute crystalline atoms; and when a liquid is cooled slowly in a state of rest, only a few minute crystals are produced at first, and these are gradually built round on all sides by successive layers, till large, well-defined crystals are the result; while, when the liquid is rapidly lowered in temperature, and especially when agitation is kept up, numerous minute crystals are formed at once, and do not adhere together. In either case, the liquid from which the crystals have separated is called the *mother-liquor*, and is a saturated solution of the salt.

The external forms of crystals amount to several thousands, but they all may be regarded as belonging to six different systems.

The *regular system* (otherwise called the *cubic, octohedral,*

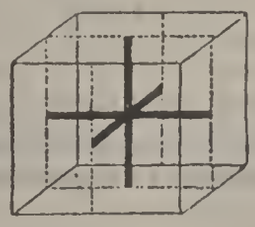


Fig. 1.

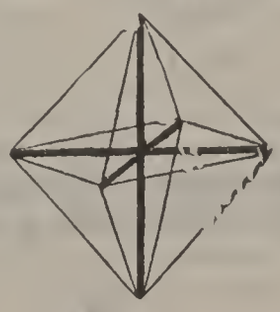


Fig. 2.

tesseral, tessular, spheroidal, or *equi-axed system*) is characterized by having three axes or straight lines passing through the same point, of equal lengths, and placed at right angles to each other. The best illustration of this system is the cube or hexahedron (fig. 1), which has six square faces or planes, and the three equal axes (printed in bold lines) terminate in the centre of each of the square faces. The planes or squares are symmetrically arranged, so that each is perpendicular to one axis, and parallel to the other two. The crystals have each 6 square faces, with 12 equal edges, and 8 equal angles. Examples of substance which crystallize in the form of the cube or hexa-

hedron, are—common iron pyrites (FeS_2), common salt, or the chloride of sodium (NaCl), fluor-spar (CaF), galena, or the sulphuret of lead (PbS), and the metals gold, silver, platinum, and copper. Another important crystalline form belonging to the regular system is the octohedron (fig 2), where the terminations of the axes are in the angles of the crystals, as represented in the figure by the bold lines. It has 8 faces, all of which are equilateral triangles, and 12 edges, with 6 angles, each of which has 4 faces. The diamond (C), alum, zinc-blende (ZnS), sal ammonia C. (NH_4Cl), magnetic iron ore (Fe_3O_4), fluor-spar (CaF), and chrome iron ore, are examples. There are various secondary forms belonging to this system, derivable from the cube and octohedron, such as the rhombic dodecahedron (fig. 3), which has 12 faces, and is the form in which the garnet crystallizes.

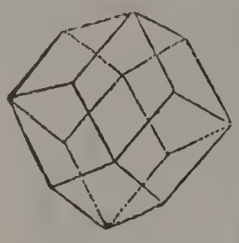


Fig. 3.

The *square prismatic system* (known as the *pyramidal, tetragonal,* or *quadratic system*) has three axes placed at right angles to each other, of which two are of equal length, but the third may be longer or shorter. To this belong the *right square prism* (fig. 4), in which the lateral axes, termi-

Fig. 4.

Fig. 5.

nate in the centre of each side face, and the perpendicular axis is longer than the two lateral axes; and the *right square-based octohedron* (fig. 5), which resembles two pyramids placed

Fig. 6.

Fig. 7.

base to base, and having 8 faces, which form isosceles triangles. Examples of substances which crystallize in this

system are—yellow prussiate of potash, native binoxide of tin, zircon, apophylite, calomel, etc.

The *right prismatic system* (otherwise known as the *right rhomboidal*, or *rectangular prismatic system*) is characterized by having three axes, all of unequal or different lengths, but placed at right angles to each other. The *right rhombic prism* (fig. 6), and the right *rhombic-based octohedron* (fig. 7), are forms included in this class, and examples of materials which crystallize in this form are—sulphur, arsenical iron pyrites, nitrate of potash, sulphate of potash, sulphate of baryta (heavy spar), topaz, arragonite, etc.

The *oblique prismatic system* (*oblique rhomboidal*, or *rectangular prismatic*) has three axes, which may be all of unequal

Fig. 8.

Fig. 9.

lengths, two of which are placed at right angles to each other, while the third axis is so inclined as to be perpendicular to one of the two axes, and oblique to the other. To this belong the *oblique rhombic prism* (fig. 8), and the *oblique rhombic-based octohedron* (fig. 9). Many salts crystallize in this form, such as green vitriol (sulphate of iron), borax, sulphate of soda, carbonate of soda, phosphate of soda, realgar (native bisulphuret of arsenic), etc.

The *doubly oblique prismatic system* has three axes of unequal length, which intersect obliquely with each other. The forms are very irregular, which render them very puzzling to make out satisfactorily. Nitrate of bismuth, sulphate of copper, sulphate of manganese, quadroxalate of potash, and pyrotartaric acid, are examples.

The *rhombohedral*, or the regular *hexagonal system*, is

Fig. 10.

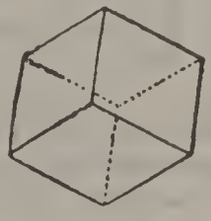


Fig. 11.

known by the presence of four axes, three of which are in the same plane, and inclined to each other at an angle of 60°, while the remaining fourth axis is perpendicular to the

three. To this belong the *regular six-sided prism* (fig. 10), and the *rhombohedron* (fig. 11). Examples of this system are—calcareous spar, ice, quartz or rock crystal, nitrate of soda, beryl, arsenic, antimony, and apatite.

CRYS'TAL PALACE: see SYDENHAM: EXHIBITION.

CRYSTAL VISION. The term is applied to a means of arousing visual pictures of a subjective nature by gazing fixedly into a crystal or other reflecting surface. Historically the practice is connected with the belief that certain persons are favored with a superhuman power of seeing what is going on at a distance, or what is to happen in the future (see CLAIRVOYANCE); and that such vision is revealed in the pictures that arise when the eyes look into the crystal, the bottom of the ink-well, etc. This practice early came into vogue as a means of divination. In recent times the term has been revived, but with a strictly psychological meaning. The process thus becomes an aid in favorably disposed individuals to the resurrection or concentration of the images and ideas that lie just below the vanishing line of conscious memory. The phenomenon belongs to the revival of the subconscious. See SUBCONSCIOUS.

CSABA, *chŏ'bŏ:* town of Hungary, 7 m. s.s.w. of Bekes. It is well built; some of the houses are even very elegant. It has a trade in grain, wine, and cattle. The women are noted for skill in making sacks and mattresses. Pop. of township (1900) 37,547.

CSANAD, *chŏ-nâd':* county in Hungary; 640 sq. m.; level and very fertile, producing wheat, fruit, tobacco, and wine. The district is not healthful. Mako is the chief town. Pop. of county (1869) 95,847; (1890) 130,609.

CSANAD: name of two agricultural towns in Hungary, both on the Marös; one with a pop. of 4,000; the other with a pop. of 5,500.

CSAT, or CSATH, *chât* (MEZO): market town of Hungary, near the Theiss, in the dist. Borsod; about 15 m. s.e. of Miskolez. Pop. 5,000.

CSERVENA, *chĕr-vĕn'kŏ:* town of Hungary, county of upper Bacs, on the Franzens Canal, about 130 m. s. of Pesth. Pop., mostly German, 7,000.

CSOMA DE KÖRÖS, *chō'mŏdĕh ke'rĕsh,* ALEXANDER, (in Hungarian Köröse Csoma Sandor): 1790–1842, Apr. 11; b. Körös in Transylvania: educated first at the college of Nagy-Ensyed, subsequently at Göttingen, where he zealously studied Oriental tongues. The dream and inspiration of his boyhood was the hope of one day discovering the original home of his Magyar ancestors; and as he grew up, it became the single thought and passion of his life. In 1820, he set out on his visionary pilgrimage. After a year's interval, his friends got a letter from him, dated Teheran, in which he expressed his conviction that the object of his search would speedily be obtained. Leaving Teheran, he wandered n.e. through Little Bokhara, and at

length reached Tibet, where he spent about four years (1827–30) in the Buddhist monastery of Kanam, studying Tibetan. He soon discovered that there was little connection between that language and his native one, but still hoped to make use of his researches, and set out for Calcutta. Here he learned, to his dismay, that the literature of Tibet was simply a translation from the Sanskrit—a language which he might easily have learned at home. Fortunately for him, the library of the Asiatic Society of Bengal contained upward of 1,000 volumes in Tibetan which no one could catalogue. He undertook and successfully executed the task. By the great Anglo-Indian scholars, Prinsep, Wilson, and others, he was very generously treated. He next prepared, at the expense of the government, a Tibetan grammar and dictionary (Calcutta, 1834), the first really accurate and valuable European work on the subject. It is still a standard treatise, and has been the guide of all good scholars since. He wrote many articles on Tibetan literature in the *Asiatic Researches*, but still haunted, as of old, by the hope of discovering the early home of the Magyars, he once more set out on an expedition to the western confines of China, but died at Darjeeling in Sikkim.

CSONGRAD, *chŏn-grâd′*: county in Hungary, through which flows the Theiss; 1,280 sq. m.; level and fertile, producing grain, fruits, hemp, and tobacco. Chief town, Szegedin. Pop. of county (1890) 262,744.

CSONGRAD′: town of Hungary, at the confluence of the Theiss and the Körös, 70 m. s.e. of Pesth. The inhabitants rear cattle, and cultivate the vine. Pop. (1880) 17,837; (1890) 20,802.

CTENIZA, n. plu. *tĕn-ĭz′a* [Gr. *ktenizō*, I comb]: genus of spiders, family *Mygdalidæ*, called Trapdoor Spiders: see SPIDER.

CTENOBRANCHIATA, *tĕn-o-brăngk-ĭ-ā′ta* [Gr. *kteis*, gen. *ktenos*, a comb; *brangchion*, a fin, plu. *gills*]: name given by Van der Hoeven to a family of mollusks characterized by spiral shells, in the last turn of which are comb-like branchiæ, as in the whelks.

CTENODACTYLUS, n. *tĕn-o-dăk′tĭ-lŭs* [Gr. *kteis*, gen. *ktenos*, a comb; *daktulos*, a finger: so called because the toes are pectinated internally]: genus of *Rodentia*, family *Octodontidæ*. There are on each foot four perfect toes and an imperfect thumb, the latter destitute of a claw.

CTENODONTIDÆ, *tĕn-o-don′tĭ-dē*, n. plu. [Gr. *kteis*, gen. *ktenos*, a comb; *odous*, gen. *odontos*, a tooth: L. suf. *-idæ*]: family of algæ, order *Ceramiaceæ*, tribe *Cryptonemeæ*.

CTENOID, a. *tē′noyd* [Gr. *ktĕna*, a comb; *eidos*, form]: comb-shaped; having the appearance of a comb; applied to the third order of fishes in the arrangement of Agassiz having the scales whose hinder edges are toothed or comb-

like, as the perch. CTENOCYST, n. *tē'nō-sĭst* [Gr. *kustis*, a bag]: a supposed sense-organ found in the Ctenophora. CTENOPHORA, n. plu. *tē-nŏf'ō-ră* [Gr. *phorĕō*, I bear]: order of Actinozoa, of which the *Beroë* (q.v.) may be taken as a type; related to the jelly-fish, having comb-like bands of cilia: see ACALEPHÆ: ZOOLOGY (Classification). CTENOPHORE, n. *tĕn'o-for*, a band of cilia arranged in comb-like plates. Such an apparatus is used by the *Ctenophora* for swimming.

CTENOID FISHES, *tĕn'oyd* or *tē'noyd*: order of fishes, according to a classification proposed by Agassiz (see FISHES), characterized by *ctenoid* scales, i.e., imbricated scales, generally rounded or ovoid, with teeth or sharp projections on their hinder margin. The scales of Ctenoid Fishes are horny or bony and unenamelled. There are sometimes numerous rows of teeth or little spines, sometimes only one row, the rows successively wearing off as new ones are formed in the enlargement of the scale. Living Ctenoid Fishes are numerous, fossil ones comparatively few. Perches, flounders, and turbot may be mentioned as examples.

CTENOMYS, n. *tĕn'o-mĭs* [Gr. *kteis*, gen. *ktenos*, a comb; *mus*, a mouse]: genus of rodent animals, family *Octodontidæ*. The toes are five on all the feet, the innermost much shorter than the others.

CTENOPHORA, *tē-nŏf'ō-ra*, a division of the sub-kingdom *Cœlenterata*, comprising free-swimming marine animals, usually glassy and transparent, which move by means of ciliated comb-like plates. The typical form is pear-shaped or ovoid, but aberrant types, such as the ribbon-shaped Venus' Girdle, are also included in this group. All the species are hermaphrodite. The group comprises two orders, *Tentaculata*, or those with tentacles, and *Non-tentaculata*, or those, forming the family *Beroïdæ*, without tentacles.

CTESIAS, *tē'shĭ-as:* B.C. 5th c.; Greek historian and physician. Abridgments of his works are extant, of which his history of Persia is most important, though little authority is credited to it.

CTESIBIUS, *tē-sĭb'e-ŭs:* Greek, abt. the middle of the 3d c. B.C. He was born at Alexandria, and was famous for inventions in mechanics. We owe to him and his pupil, Hero Alexandrinus, the pump, the bent siphon, and the discovery of the elastic force of air, and its application as a motive power.

CTESIPHON, *tĕs'e-fon* (now AL-MADAIN) city of Assyria, on the e. bank of the Tigris; the common winter residence of the Parthian kings, and finally cap. of the Parthian kingdom. Its ruins attest its ancient magnificence.

CUB, n. *kŭb* [Icel. *kobbi*, a seal: Gael. *cubeag*; Ir. *cuib*, a young dog]: the young of certain animals, generally of the bear and fox; a boy or girl in contempt: V. to bring forth young. CUB'BING, imp. CUBBED, pp. *kŭbd*.

CUBA.

CUBA, *kū'ba:* largest island of the Antilles, and formerly a possession of the Spanish crown, whose sovereignty ceased 1899, Jan. 1, when the United States army took formal possession to guarantee an independent government to the island. It is situated in n. lat. from 19° 50′ to 23° 9′, and in w. long. from 74° 8′ to 84° 58′; length, rather more than 750 m., breadth, 27 m. to 125 m.; nearly 45,700 sq. miles; about the size of Penn. The surface is mountainious at the s.e. coast, where the Sierra Maestra, rising in some places 8,000 ft., runs from Cape de Cruz to Cape de Mayzi. In the central part of the island there are rugged hilly districts between Santa Clara and Puerto Principe, also n.w. of Trinidad. The remainder of the country, though undulating, consists chiefly of well-watered plains, which everywhere support luxuriant vegetation. Rocky reefs and muddy shallows beset about two-thirds of the coast. In some localities, however, the sea is deep to the very shore, offering many excellent havens, and those, too, on the busiest marine thoroughfares of the w. hemisphere; the chief of these being the harbor of Havana, a city whose admirable situation makes it the emporium of Central America. A somewhat elevated watershed crosses the island in the direction of its length, and as the streams run at right angles to it, they are necessarily short. There is in C. no distinction of dry and rainy seasons, and there are showers every month. Hurricanes are less frequent than in the other W. India Islands, but they sometimes cause widespread desolation. One which swept over C. 1870, Oct., caused the loss of 2,000 lives. Another occurred 1873, Sep. Earthquakes are frequent. The cultivated portions of C. produce in abundance sugar, tobacco, maize, rice, yams, bananas, coffee, and all the products of the tropics; while in the districts left in a state of nature are reared countless herds of cattle. Sugar is, however, the chief product of the island.

The mineral resources of the island are known to be large, but as yet very imperfectly developed. Copper and iron are the only metals produced to any extent, and a good quality of bituminous coal is found. The production of sugar in 1905 was well over 1,000,000 tons, of which the greater part was exported to the United States (2,057,684,169 lbs., valued at $64,366,104). The exports of tobacco (1903) were about 26,000,000 lbs., of which 20,504,098 lbs., valued at $9,794,196, were exported to the United States. Iron ore is also produced in large quantities and shipped to the United States. Other exports are rum, mahogany and other timber, and fruits. The imports are chiefly rice, beef, flour, and other merchandise. The total exports (1905) were $110,167,485, and the imports $94,806,655. There are about 1,600 miles of railroad besides the private lines of the sugar plantations; there are over 3,000 miles of tele-

graph lines. The revenue of the island for 1900–1 was $17,154,889, and the expenditures $17,644,494.

The following shows the recent trade of C. with the United States: exports (1883), $65,544,534; (1884) $57,181,497; (1885) $42,306,093; (1893) $78,706,506; (1905) $86,304,259; imports (1883), $14,567,918; (1884) $10,562,880; (1885) $8,719,195; (1893) $23,604,094; (1905) $38,380,601. Pop. (1872) 1,370,211, of whom 730,750 were whites about 34,000 Chinese and Hindu coolies, and 605,461 blacks; (1877) 1,394,516; (1890) 1,631,687, of whom 977,992 were Spaniards and Spanish creoles, 489,249 negroes, 10,632 foreign whites; (1899) 1,572,797. The negroes of pure blood alone have the strength necessary to do the hard work of the sugar estates, and the prosperity of the island is dependent on them. Although the creoles and the 'peninsulares' are of the same origin, the difference between them is most striking. They can be distinguished at a glance in the streets of Havana. The creoles are feeble and indolent, even when they are children of parents born in Spain. The Cuban Spaniards, on the other hand, are sturdy and energetic. Recruited from the n.e. parts of Spain, they go to C. as adventurers, chiefly to find employment as traders and mechanics, but obtain the greater share of the wealth of the island. There are upward of 200,000 adult male creoles, and half that number of Spanish Cubans; but the latter formerly had absolute control over the government of the island, which was administered unjustly. They treated the creoles with a scorn and contempt only exceeded by the hatred, mixed with fear, with which the latter regard the dominant population. 'Cuba for Cubans' was the creoles' watchword, whose most anxious desire was to be rid of the adventurers, who had secured for themselves the best share of the island's wealth. The armed intervention of the U. S. (1898) established the independence of Cuba: see SPANISH-AMERICAN WAR.

Until recently the government was administered by a governor-general and a council of administration, appointed by the Spanish government; and C. was represented in the Spanish cortes by 16 senators and 30 representatives. There are 6 provinces, each of which had a governor appointed by the crown, and a local elective assembly, which, however, had but slight control of public affairs. A U. S. military govt. was in charge, 1899–1902. The provinces from e. to w.: Santiago de Cuba, Puerto Principe, Santa Clara, Matanzas, Havana, and Pinar del Rio. The chief cities and their pop. (1899) are Havana, 235,981; Santiago de Cuba, 43,090; Puerto Principe, 25,102; Holguin, 6,045; Cardenas, 21,940; Cienfuegos, 30,038; Mantanzas, 36,374.

C., which is often spoken of as the 'Pearl' or Queen of the Antilles,' was discovered by Columbus during his first voyage, 1492. In 1511, the island began to be permanently colonized, becoming, within ten years, the base of all the various operations against Mexico. While, in

CUBA
SCALE OF MILES
HAVANA HARBOR
SCALE OF MILES
MEXICO
SCALE OF MILES
GULF OF MEXICO
Nicholas Channel
TROPIC OF CANCER
CARIBBEAN SEA
PACIFIC OCEAN
Bay of Campeche
JAMAICA
Kingston
HAITI
Havana
LA HABANA
MATANZAS
SANTA CLARA
PINAR DEL RIO
PUERTO PRINCIPE
SANTIAGO DE CUBA
ISLE OF PINES
Longitude 82° West from Greenwich 80°
Longitude 108° West from 104° Greenwich 100°
GORMAY & CO., N.Y.

the first quarter of the present c., every continental portion of Spanish America established its independence, C. remaining, like Puerto Rico, faithful to the mother-country, largely profited by the intestine broils of the revolted provinces, for, when the old Spaniards were expelled in mass from the mainland, many of them naturally took refuge in the still loyal islands, enriching them with their capital, and energy, and skill. C. has long been coveted by other nations. In 1762, Havana was captured by a British armament, but was restored in the following year. When the king of Spain was deposed by Napoleon in 1808, C. remained loyal to the crown, and made many sacrifices for the royal family; but the promises of liberal treatment for C. were never fulfilled. The desire to extend the territory of the slave states made C. an object of cupidity to the southern states, and Pres. Pierce in 1848 offered Spain $100,000,000 for the island. In 1849–51 three filibustering expeditions were led against C. from the United States by Narciso Lopez, the last resulting in his capture and execution. The Madrid ministry, 1870, passed a measure known as the Morlet law, which declared that every slave at the age of 60 should become free — and emancipated all the unborn offspring of slaves. This law never was enforced by the Spanish govt. because of the disapproval of the 'loyal party' in Cuba. Instead of doing so, it accepted their alliance, and aided them by sending troops to crush the creole and negro insurrection which broke out 1868. The struggle was carried on with varying success, and often with unexampled ferocity, for 11 years. It was not till the end of 1879 that the authorities, partly by military energy, partly by terms of compromise, succeeded in quelling the rebellion. Pardon was offered to rebels laying down their arms, and restoration of confiscated property. The loss of life in this insurrection was estimated at 200,000, including over 45,000 prisoners shot by the Spaniards. The expenditures incident to the war amounted to about $700,000,000. In 1880 a new law was passed providing for the gradual emancipation of the slaves in C., and Oct. 7, 1886, a decree was issued emancipating the 25,000 remaining slaves and destroying the last vestiges of the system in the island. In 1894 a bill was introduced into the Spanish cortes with every prospect of passing, granting a large measure of home rule to the island; but the concession came too late to satisfy the discontent due to the long course of Spanish misrule. In Feb., 1895, José Marti, as head of a provisional government, and Gen. Maximo Gomez, as gen.-in-chief, landed in C., and a general uprising in the eastern part of the island immediately occurred. Several successes were won by the insurgents, who numbered about 7,000 men in March. Gen. Martinez Campos, who had put an end to the war of 1868–79, was sent out in April as gov.gen. and commander-in-chief, with unlimited powers and large reinforcements. By the end of Dec. the Spanish forces num-

bered about 90,000 besides about 40,000 *guerrilleros*, or volunteers, and a large naval force to guard the coast. In spite of this large force the insurgents had been able to keep the field with increasing force and win several battles; but the war was mainly of a guerrilla character and the insurgents systematically destroyed the machinery of the sugar plantations, in order to cut off the chief source of revenue for Spain. In Sep., 1895, a proclamation of independence was issued and a permanent government chosen, with Salvadore Cisneros, who was pres. of the revolutionary govt. from 1873–79, as pres., Bartolomé Masso vice-pres., Maximo Gomez general-in-chief, and Antonio Maceo lieut.-gen.

Early in 1896 Cuban affairs assumed new importance in the U. S., and debates in Congress revealed a popular disposition on the part of this country to aid Cuba, at least to the extent of stopping the butchery of the insurgents. In Jan. Gen. Campos was recalled by Spain, and Gen. Valeriano Weyler was sent to Cuba in his place. In Feb. Gen. Weyler established the sternest martial law. In early spring Gomez and Maceo had an aggregate force of about 12,000, and large royalist reinforcements arrived from Spain. Numerous conflicts soon occurred, and Gen. Weyler was accused of shocking inhumanity to his captives. Cuban rebels were encouraged by the arrival of expeditions from the U. S. with arms and ammunition and the warfare became more sanguinary, victory being claimed alternately by Spaniards and Cubans. Gen. Fitzhugh Lee, appointed consul-general at Havana, entered on his official duties 1896, June 3, the military situation at that time showing no prospect of Spanish success. Spain had so far sent to the island 140,000 regular troops, and had gathered 60,000 volunteers. Of the regulars, about 25,000 had died and 15,000 were in hospitals. The insurgents had about 35,000 armed men, and they ranged practically through the whole island, except the seaport towns, maintaining guerrilla warfare. On July 30 the pres. of the U. S. issued a proclamation warning citizens against conspiring to aid Cuban insurgents in unlawful ways, one of the attributed reasons for this monition being that should Spain be successful in the Cuban war the Spanish govt. might have large claims for damages against the U. S., growing out of filibustering expeditions. At the end of the year the struggle was proceeding with frightful barbarism, Gen. Weyler's excursions having otherwise but meagre results. In Dec. Gen. Maceo was killed, by ambush, but his death did not have the depressing effect generally expected. The insurgents seemed only to grow more courageous. In Spain great indignation was excited by the friendly attitude of the U. S. Congress toward Cuba. Early in 1897 the queen regent of Spain signed a decree instituting certain reforms of government in Cuba, which made a bad impression in Spain, as the reforms were

deemed a surrender to the Cubans. The loss in Cuban trade to the U. S. through the Cuban war shows a decline of more than 50 per cent.

The Spanish government offered an armistice to the Cuban insurgents, which they refused, early in 1898. On April 5 all U. S. consuls on the island were recalled, and six days later President McKinley sent a message to Congress declaring that American intervention in Cuba was necessary. On the 19th Congress adopted resolutions declaring Cuba independent, and directing the President to use the forces of the U. S. to terminate Spanish sovereignty on the island. As soon as this was known in Madrid the Spanish authorities sent the U. S. minister his passports, thus commencing a war (April 21) that ended in the evacuation of Cuba by the Spanish troops: see SPANISH-AMERICAN WAR.

When the United States in 1898, April 18, determined to intervene between the Spanish and Cubans, and to force Spain to relinquish its authority and government in the island, Congress disclaimed 'any disposition or intent to exercise sovereignty, jurisdiction or control over said island, except for the pacification thereof,' and asserted its determination, when that was accomplished, 'to leave the government and control of the island to its people.' The U. S. assumed control of Cuban affairs 1899, Jan. 1, after the Spanish troops had evacuated, and retained control thereof until 1902, May 20, when the government was transferred to the Cubans. The right, however, was reserved by Congress in Article III of the Platt amendment, 'to intervene for the preservation of Cuban independence, the maintenance of a government adequate for the protection of life, property, and individual liberty and for discharging the obligations with respect to Cuba imposed by the treaty of Paris on the United States, now to be assumed and undertaken by the government of Cuba.' Thomas Estrada Palma was elected president and installed 1902, May 20, and served through his first term with universal credit and confidence, but owing to the methods employed in the elections of 1905 by the Moderate Party, of which Palma was leader and candidate, grave charges of bribery, intimidation, illegal voting, etc., were made by the Liberal Party, of which José Miguel Gomez was Presidential candidate. The methods were considered to be so flagrant that the Liberals refrained from voting and Palma was elected and reinaugurated 1906, May. From that time the opposing party became more assertive, the insurrectionary spirit gathered force, and lawless outbreaks and armed clashes occurred in many places between the adherents of the two parties. By the middle of August the insurrection had assumed the porportions of a civil war. Palma several times ineffectually requested intervention by the U. S. On Sept. 14, President Roosevelt, in a letter to Señor Gonzalo Quesada, Cuban Minister at Washington, after giving

the official interpretation of the right of intervention and urging the Cubans to adjust their differences, said: 'Our intervention in Cuban affairs will only come if Cuba herself shows that she has fallen into the insurrectionary habit, that she lacks the self-restraint necessary to secure peaceful self-government and that her contending factions have plunged the country into anarchy.' An indefinite suspension of hostilities was agreed upon, but peace negotiations between the leaders failed to bring about a culmination of the trouble and finally the established government, absolutely refusing to grant the Liberal demands or treat further with them, confessed itself unable to cope with the situation. Sec'y of War Taft and Ass't-Sec'y of State Bacon were dispatched to Cuba by President Roosevelt as arbitrators with full power to adjust matters. They arrived in Havana Sept. 19, and conferences were immediately held with the leaders of both parties, the Liberals being represented by their president, Senator Alfredo Zayas, and the government by Vice-President Domingo Mendez Capote. The Liberals' most insistent demand was the annulment of the last election and the holding of a new election. Rather than accede to those demands or accept the terms of peace offered by Taft and Bacon, Palma, together with the Vice-President and Cabinet, despite protests and all influence which could be brought to bear on them to reconsider, resigned Sept. 28. Upon the failure of the Cuban Congress to elect a successor Sec'y Taft on the 28th, by virtue of the authority vested in him by President Roosevelt, declared Cuba under the authority of the United States with himself Provisional Governor. The proclamation reads:

"The failure of Congress to act on the irrevocable resignation of the President of the Republic of Cuba or to elect a successor leaves this country without a government at a time when great disorder prevails and requires that, pursuant to a request of President Palma, the necessary steps be taken, in the name of and by the authority of the President of the United States, to restore order and protect life and property in the island of Cuba and in the islands and keys adjacent thereto, and for this purpose to establish therein a provisional government. The provisional government hereby established by direction and in the name of the President of the United States will be maintained only long enough to restore order and peace and public confidence, and then to hold such elections as may be necessary to determine those persons upon whom the permanent government of the republic should be devolved.

"In so far as is consistent with the nature of a provisional government, established under the authority of the United States, this will be a Cuban government, conforming as far as may be with the Constitution of Cuba. The Cuban flag will be hoisted as usual over the Government buildings of the island; all the executive departments and the provincial and municipal governments, including that of the city of Havana, will continue to be administered as under the Cuban Republic; the courts will continue to administer justice; and all laws not in their nature inapplicable by reason of the temporary and emergent nature of the government will be in force.

"President Roosevelt has been most anxious to bring about peace under the constitutional government of Cuba

and has made every endeavor to avoid the present step. Longer delay, however, would be dangerous, in view of the resignation of the Cabinet.

"Until further notice, the heads of all the departments of the central Government will report to me for instructions, including Gen. Alejandro Rodriguez, in command of the Rural Guard and the other regular forces, and Gen. Carlos Roloff, Treasurer of Cuba. Until further notice, the civil Governors and Alcaldes will also report to me for instructions.

"I ask all citizens of Cuba to assist in the work of restoring order, tranquillity and confidence.

"WM. H. TAFT,
"Secretary of War of the United States, Provisional Governor of Cuba.

"Havana, Sept. 29, 1906.
"F. R. McCoy, Captain, Third Cavalry, Aide."

Upon assuming office, Taft released all revolutionary leaders, called upon the insurgent forces to lay down their arms and retire peacefully to their homes, and appointed a commission to carry out the delivery of the arms. He also retained the ass't.-sec'ys of the gov't under the Palma régime as provisionary heads of their respective departments, and requested all foreign representatives of Cuba to continue in their positions at least until order was restored.

CUBBY, a. *kŭb'bĭ:* narrow, confined: n. a narrow or confined place, otherwise a cubby-hole.

CUBE, n. *kūb* [F. *cube*—from L. *cubus*, a square on all sides: G. *kubos:* Ar. *ka'ab*, anything in the form of a block]: a solid body with six equal sides, all squares; a number multiplied twice by itself, as $4\times4\times4=64$, 64 being the cube of 4: V. to raise to the third power. CU'BING, imp. CUBED, pp. *kūbd.* CUBIC, a. *kū'bĭk*, or CUBICAL, a. *kū'bĭ-kăl*, solid, not superficial; pertaining to the length, breadth, and thickness of a body. CU'BICALLY, ad. *-lĭ.* CU'BICALNESS, n. state or quality of being cubical. CU'BIFORM, a. *-bĭ-fawrm* [L. *forma*, shape]: having the form of a cube. CU'BOID, a. *-boyd*, or CUBOI'DAL, a. *dăl* [Gr. *eidos*, form]: having nearly the form of a cube. CUBE ROOT, the first power of a cube, as 4 is the *cube root* of 64. CUBATURE, n. *kū'bă-tŭr*, the finding exactly the solid or cubic contents of a body. CUBE-ORE, an arseniate of iron, occurring in perfect cubes in copper ores. CUBOID BONE, one of the small bones of the foot.

CUBE: in geometry, a solid bounded by six equal square faces, a regular hexahedron, one of the five regular solids. It is a form of frequent occurrence in nature, especially among crystals. (See CRYSTALLOGRAPHY).—In arithmetic and algebra the cube of a number is its third power, or the product obtained by using the number three times as a factor; thus $2\times2\times2=2^3=8$ and $a\times a\times a=a^3$. These forms, 2^3 and a^3 are read, '2 cube' and '*a* cube,' respectively. This use of the term arises from the fact that the number of cubic units in the volume of a cube is equal to the third power of the number of linear units in one of its edges. E.g., if the edge of a cube is a line three inches long, its volume is $3\times3\times3=3^3=27$ cubic inches. Conversely, the cube root of a number is that number

which raised to the third power will produce the given number. E.g., since $64=4^3=4\times4\times4$, 4 is the cube root of 64. See DOUBLING THE CUBE.

CUBIC EQUATION, containing one unknown, is an equation in which the exponent of the highest power of the unknown is 3. Every cubic equation has three roots, one of which is always real, the other two being either real or imaginary. The most general cubic equation may be written in the form $x^3+ax^2+bx+c=0$. If in this we write $x—a/3$ in the place of x, the new equation will take the form $x^3px+q=0$, i.e., the second power of x is thus made to disappear. In this form the complete algebraic solution of the cubic equation is

$$x=\sqrt[3]{-\frac{q}{2}+\sqrt{\frac{q^2}{4}+\frac{p^3}{27}}}+\sqrt[3]{-\frac{q}{2}-\sqrt{\frac{q^2}{4}+\frac{p^3}{27}}}$$

which is known as *Cardan's Formula.*

This solution, however, unlike that of the quadratic equation, is of little practical value for finding the roots when they are all real, for in that case $\frac{q^2}{4}+\frac{p^3}{27}$ is a negative number; and, since there is no method in algebra for extracting the cube root of an expression in the form of a rational number plus an imaginary number, the solution cannot be found. In this case, which is called the *Irreducible Case,* Cardan's method is said to fail. The roots can be found by Trigonometry, or by *Horner's Method,* which see. If $\frac{q^2}{4}+\frac{p^2}{27}=0$, two of the roots are equal, and if $\frac{q^2}{4}+\frac{p^3}{27}$ is positive, two of the roots are imaginary. In either of these two cases, Cardan's formula will give the third root. If in any case one of the roots is an integer, it can easily be found by trial, for it must be one of the divisors of the last term of the equation.

Although the above solution is known as Cardan's formula, it was invented by Tartaglia, another noted Italian mathematician. See ALGEBRA.

CUBEB *kū'bĕb* [Hind. *kubâba*]: the unripe fruit of *Piper cubeba,* a climbing perennial with smooth stem and alternate lance-shaped, bright green, shining leaves. It is a native of the East Indies, being extensively cultivated in Java and Sumatra. It was introduced into medicine by the Hindus and Arabians, who employed it widely as a condiment also. Cubebs contain about 14 per cent. of volatile oil, a small amount of an indifferent substance termed cubebin, and cubebic acid. It also contains a small amount of resin. A mixture of oils, resins, and acids comprises the oleorosin of cubebs that is used in medicine. It is an active spice somewhat related to pepper, its botanical ally, but the taste is more pleasant

and less pungent. It is used as a local stimulant in indigestion and as a flavoring vehicle in mixtures and gargles. It is valuable, particularly in diseases of the mucous membrane, especially of the bronchi, of the bladder and of the urethra.

CUBIT, n. *kū'bĭt* [Gr. *kubĭton*, the elbow or bending of the arm—from *kupto*, I bend: L. *cubĭtum*, the elbow, bending or curvature of a shore—from *cubārĕ*, to lie or bow down: It. *cubito:* comp. Gael. *cub*, to bend; *cubach*, bent]: ancient measure, equal to the length of a man's arm from the elbow to the extremity of the middle finger; its precise length is not known, and is supposed to have varied at different times; also the use of a greater and a less cubit is inferred by many writers; in general the Hebrew cubit or *ammah* seems to have measured from abt. 18 in. to a little more than 22 in.; and the Roman cubit to have been not far from 18 inches; in *anat.*, the forearm. Cu'bital, a. *-bĭ-tăl*, of the length or measure of a cubit; pertaining to the elbow. Cu'bited, a. *-bĭ-tĕd*, having the measure of a cubit.

CUCKOO, n. *kûk'kó* [F. *coucou*, the cuckoo—from L. *cŭcūlus*, the cuckoo: Gr. *kokku*, the cry of a cuckoo]: a well-known bird, so called from its note in spring. Cuckoo spit, or spit'tle, n. a frothy matter found on plants, containing the larva of the frog-hopper. Cuckold, n. *kŭk'ŏld* [OF. *coucuol*, a cuckold—from *coucou;* comp. Gael. *caochladh*, change]: a husband whose wife is false to his bed, in reference to the cuckoo, which lays its eggs in the nests of other birds. Cuck'oldly, a. *-lĭ*, having the qualities of a cuckold; poor; mean; cowardly. Cuckold-maker, one who corrupts men's wives. Cuck'oldom, n. act of adultery; state of a cuckold. Cuck'odry, n. *-rĭ*, system of making cuckolds. Cuckoo-bees, n. plu. bees of the family *Andrenidæ*, genus *Nomada:* so called because instead of making nests they deposit their eggs in the cells of other bees. They are elegant in form and brightly colored. Cuckoo-bud, the *Ranuncŭlŭs bulbōsus*, a native wild plant, ord. *Ranuncŭlācĕæ*. Cuckoo-flies, name often given to the hymenopterous insects called Ichneumonides, which deposit their eggs in the nests of other insects or in the bodies of their larvæ. The eggs when hatched give egress to predatory larvæ, which devour the insects that have sheltered them. Cuckoo-flower, the *Cardăm'ĭnĕ praten'sis*, a native wild flower, ord. *Crucĭfĕræ*. Cuckoo-pint, a native poisonous plant called 'lords and ladies,' or the 'wake-robin'; the *Arum măcŭlātum*, ord. *Arācĕæ*.

CUCKOO: genus of birds of the order of Climbers (q.v.); type of a family, *Cuculidæ*, which contains a large number of species, mostly confined to the warmer regions of the globe, though some of them are summer visitants of cold climates. The beak is compressed and slightly arched, and the tail long and rounded, the wings rather long, the tarsi short, two toes directed forward, and two

pipits usually accompany the cuckoo wherever it goes. The reason of this curious fellowship has not been ascertained.—Among the *Cuculidæ* of N. America, one of the most interesting is the Yellow-billed American C., sometimes called from its note the *Cow-cow* or *Cow-bird* (*Coccyzus Americanus*). It does not lay its eggs in the nests of other birds, but builds and hatches for itself—exhibiting, however, a remarkable peculiarity in laying its eggs at such long intervals, that a very evident difference of age appears among the young in the same nest.

CUCUBALUS, n. *kū-kū′bal-ŭs:* genus of plants, ord. *Caryophillaceæ*, tribe *Sileneæ;* genus of jelly fishes.

CUCUJIDÆ, n. *kū kū′jĭ-dē* [mod. L. *cucujus*, and suf. *-idæ*]: a family of beetles. CUCUJUS, *kū-kū′jŭs:* genus of beetles, typical of the family *Cucujidæ.*

CUCULIDÆ, n. plu. *kū-kūl′ĭ-dē* [L. *cuculus*, and suf. *-idæ*]: family of scansorial birds. It is divided into five subfamilies: (1) *Cuculinæ* (true Cuckoos), (2) *Crotophaginæ* (Anis), (3) *Coccyzinæ* (Hook-billed Cuckoos), (4) *Saurotherinæ* (Ground Cuckoos), (5) *Indicatorinæ* (Honey-guides). See CUCKOO.

CUCULLATE, a. *kū-kŭl′lāt*, or CU′CULLA′TED, a. [L. *cucullus*, a cowl or hood: It. *cucullo*]: in *bot.*, formed like a hood; covered as with a hood or cowl.

CUCUMBER, n. *kū′kŭm-bĕr* [OF. *coucombre*—from L. *cŭcŭmis* or *cŭcŭm′ĕrem*, a cucumber]: genus of plants of the nat. ord. *Cucurbitaceæ.* The COMMON C. (*C. sativus*), distinguished by heart-shaped, acuminately pentangular leaves, which are rough with hairs approaching to bristles, and oblong fruit, is a native of the middle and south of Asia, and has been cultivated from the earliest times. Its fruit is an important article of food in its native regions, the south of Europe, etc., and an esteemed delicacy in colder countries, where it is produced by the aid of artificial heat. Many varieties are in cultivation, with fruit from four inches to two ft. long, rough, smooth, etc. Young cucumbers are much used for pickling, and are called *gherkins.* The C. has a trailing growth, and requires a sunny situation, and a free rich soil.—To this genus belong other species valued for their edible fruit. *C. Anguria* is a W. Indian species, with fruit about as large as a pullet's egg, much esteemed as an ingredient in soups. The SNAKE C. (*C. flexuosus*) grows to a great length, and is similar in quality to the common cucumber. *C. serotinus* is cultivated in Turkey, *C. macrocarpus* in Brazil; the CONOMON (*C. conomon*) is much cultivated in Japan. For the Melon (*C. melo*), Water Melon (*C. citrullus*), Chate (*C. chate*), and Kaukoor (*C. utilissimus*), see MELON: for the species yielding colocynth, see COLOCYNTH.—The DUDAIM (*C. dudaim*) is very generally cultivated in gardens in the East for the fragrance of its fruit, which, however, is almost tasteless. It is supposed that this plant is sometimes meant in the Old Testament, where the English version has *mandrake.*—The SPIRTING C., SQUIRTING C., or WILD C., which yields the drug called Elaterium (q.v.), belongs to an allied genus.

CUCUMBER-TREE: forest growth of the United States, of the magnolia family, native of the Alleghany mountain region, though found in many states between Niagara Falls and Ga. It grows tall, with foliage of a darker green shade than other magnolias, bears small light green flowers, and fruit similar in size and shape to the edible cucumber. The fruit is very bitter, and its expressed juice is used in the manufacture of tonic and anti-rheumatic medicine, cosmetic, ointment, and pomade. Pumps and boats, especially canoes, are made from its wood, because of its lightness.

CUCURBIT, n. *kū-kėr'bĭt* [L. and It. *cŭcurbĭta*, a gourd: F. *cucurbite*]: a chemical vessel in the shape of a gourd having a wide mouth. CUCURBITA, *-bĭ-ta*, typical genus of the order *Cucurbitaceæ*. CUCUR'BITA'CEOUS, a. *-bĭ-tā'shŭs*, resembling a cucumber or gourd. CUCUR'BITA'CEÆ, n. *-tā'shĭ-ē*, nat. ord. of exogenous plants, consisting chiefly of herbaceous plants, natives of the warmer regions of the globe, having succulent stems which climb by means of lateral tendrils. There are some shrubby species. The fruit (*pepo*) is peculiar; it is more or less succulent, has a thick fleshy rind, and the seed bearing parietal placentæ either surrounding a central cavity, or sending prolongations inward. The seeds are flat and ovate, embedded in a sort of pulp, which is either dry or juicy.—This order contains about 300 species, very many of which yield fruits much used for food in warm climates, and some are cultivated in colder regions as articles of luxury. The fruit of some attains a very large size. To this order belong the cucumber, melon, gourd (of many kinds), pumpkin, squash, vegetable marrow, bottle gourd, etc. The young shoots and leaves of many species are used also as potherbs; and the roots of some abound in a bland fecula, and are edible, as those of *Momordica dioica* and *Bryonia umbellata*, E. Indian plants. Yet acridity is a prevailing characteristic, of which the Spirting Cucumber (see ELATERIUM) of the south of Europe, and the common BRYONY (q.v.) are examples. These are not without their use in medicine, but still more important is the COLOCYNTH (q.v.).—Among the more interesting species of this order is *Hodgsonia heteroclita*, a gigantic species, in the Himalaya Mountains, growing even at an elevation of 5,000 ft. The seeds of some C. are used as almonds, and yield oil by expression, as those of *Telfairia pedata*, an African plant.

CUD, n. *kŭd* [AS. *cud*, what is chewed, a cud: comp. Gael. *cuid*, a small piece, a bit: Icel. *quidr*, the womb, the paunch: Esthon. *köht*, the belly]: the food which a ruminating animal, as the cow or sheep, throws up from its first stomach to chew at leisure. CUD'CHEWING, applied to ruminating animals TO CHEW THE CUD, *fig.* to reflect, as to chew the cud of bitter reflection.

CUDBEAR, n. *kŭd'bār* [after Dr. *Cuthbert* Gordon under whose management the manufacture was begun in Leith, Scotland, abt. 1777]: purple or violet dyestuff similar to Archil (q.v.) and Litmus (q.v.), and obtained in the same manner from lichens by the action of ammoniacal liquids. It is used chiefly as a purple dye for woolen yarn, but the

color is rather fugitive. The name C., or C. Lichen, is often appropriated to one particular species of lichen, *Lecanora tartarea*, which is abundant on rocks in the Highlands of Scotland and in the Alpine and n. districts of Europe, and from which the dyestuff C. is usually obtained by maceration for 10 or 15 days in urine with water and chalk. The species of the genus *Lecanora* are crustaceous lichens, with a flat uniform *thallus*, and unstalked *shields*. *L. tartarea* forms a thick, granulated, and tartareous grayish-

Cudbear (*Lecanora tartarea*).

white crust, with scattered yellowish-brown shields. It is sometimes called *White Swedish Moss*, being largely imported from Sweden.

CUDDALORE, *kŭd-da-lōr':* chief town in the s. division of Arcot (q.v.); one of the few seaports on the Coromandel, or e. coast of Hindustan. It is on the estuary of the Southern Pennaur, a considerable tributary of the Bay of Bengal; lat. 11° 43′ n., and long. 79° 50′ e. It is 15 m. s. of Pondicherry, and 100 s. of Madras. Though the river itself is beset by a bar, which admits vessels only of moderate size, yet there is good anchorage off-shore at the distance of a mile and a half. The site is not more than 5 ft. above high-water mark; nevertheless the climate is said to be peculiarly healthful. C. was formerly a place of great strength; and in that respect it was frequently an object of contention in the desolating wars during the latter half of the 18th c. In 1758, it was taken by the French from the English, who had held it for 77 years; and, after various intermediate vicissitudes, it was finally ceded to its original possessors, 1783. Pop. (1901) 52,216.

CUDDAPAH, *kŭd'dâ-pâ:* district in the presidency of Madras; lat. from 13° 12′ to 16° 19′ n., and long. from 77° 52 to 79° 48′ e.; 8,745 sq. m. Sloping toward the Bay of Bengal, the country ranges, in general elevation above the sea, between 1,182 and 450 ft. C. is traversed in its length from n. to s. by numerous parallel ridges, part of the Eastern Ghauts—some of the peaks rising 3,500 ft. above the sea. The maximum, mean, and minimum temperatures are said to be respectively 98°, 81°, and 65° F. In the hot season,

the climate is understood to be peculiarly trying to European constitutions. The most striking feature in the physical character of the district is the remains of diamond mines, now abandoned, and probably exhausted, about seven m. from the capital. C. was ceded to Britain 1800; and in 1846 it was the scene of serious disturbances, occasioned by an unwise interference on the part of government with the prescriptive titles to landed property. Pop. (1891) 1,268,887.

CUDDAPAH: a native town with a military cantonment in the presidency of Madras, from which it lies about 140 m. n.w. It is 507 ft. above the sea; near the right or south bank of the Northern Pennaur, which flows into the Bay of Bengal. Lat. 14° 32′ n., and long. 78° 52′ e. The native town itself claims notice merely as the cap. of the dist. of its own name; and the military cantonment, pleasantly overhanging the Bogawanka, an auxiliary of the Pennaur, contains barracks for Europeans, and spacious lines for sepoys. Pop. (1881) 18,982; (1891) 17,379.

CUDDLE, v. *kŭd′l* [a corruption of OE. *couthle*, to be frequently familiar—from *couth*, well-known: Dan. *kudde*, a flock: old Dut. *kudden*, to come together: comp. Gael. *cadail*, sleep, rest in bed]: to embrace so as to keep warm; to fondle; to lie close and snug. CUD′DLING, imp. CUDDLED, pp. *kŭd′ld*.

CUDDY or CUDDIE, n. *kŭd′dĭ* [Gael. *cuidich*, to assist in farm work, to help: probably a familiar corruption of *Cuthbert*]: a farm laborer; a boor; a donkey-driver; a donkey; a three-legged stool employed as a fulcrum on laying or repairing railway lines; the coal-fish—one of the cod-fish family. *Note.*—The coal-fish is popularly called a *cuddy*, from the corruption of *cuth* = *cud*, the name of the young of the coal-fish in its first year, the Icel. *dth*, having been treated as if an Eng. *d*.

CUDDY, n. *kŭd dĭ* [probably a contraction of *cuddle*, to lie close and snug: W. *caued*, shut up or inclosed]: name applied first in E. India trading ships to a cabin under the poop, where the men messed and slept; afterward to the only cabin in very small vessels; and sometimes to the cooking-room, or even any small low-roofed apartment on shore.

CUDGEL, n. *kŭj′ĕl* [Gael. *cuigeal*, a distaff—from *cuaille*, a club: Ir. *cuigeal*, and *coigeal*, a distaff—from *cuaill*, a pole: W. *cogyl*, a cudgel; *cogail*, a distaff]: a short thick stick of wood which may be held in the hand and used as a weapon: V. to beat with a thick stick. CUDG′ELLING, imp. CUDG′ELLED, pp. *-ĕld*. CUDG′ELLER, n. one who.

CUDWEED, n. *kŭd′wēd* [probably a contraction of *cotton-weed*]: popular name of many species of plants of the genera *Gnaphalium*, *Filago*, and *Antennaria*, of the nat. ord. *Compositæ*, sub order *Corymbiferæ*, the stems and leaves of which are more or less covered with a whitish cottony down; and the heads of flowers consist, in great part, of dry involucral scales, and may be kept for a long time without undergoing much apparent change, so that the

may be reckoned among *Everlasting Flowers* (q.v.). The cudweeds are small plants of unpretending appearance. *Antennaria dioica*, sometimes called Cat's foot, is frequent in dry mountain pastures; its heads of flowers from the appearance of which it derives this name, were formerly officinal, and were employed as an astringent in pectoral diseases.

CUDWORTH, *kŭd'worth*, Ralph, D.D.: 1617–1688, July 26; b. Aller in Somersetshire, England. He was admitted pensioner of Emmanuel College, 1632, where he took his degree M.A.., and became an eminent tutor; and in 1644, upon taking his degree of B.D., maintained two theses, in which can be traced the germs of his *Intellectual System*. In 1645 he was appointed master of Clare Hall, Cambridge, and regius prof. of Hebrew; after which he began to apply himself assiduously to the study of Jewish antiquities. About 1650 he was presented with the rectory of North Cadbury, Somersetshire. In 1651, he took his degree D.D.; 1654, was chosen master of Christ's College; 1662, appointed to the vicarage of Ashwell; 1678, installed prebendary of Gloucester. He died at Christ's College. Cudworth's chief work, entitled *The True Intellectual System of the Universe*, was published in 1678. It is a work of great learning and acuteness, but in his use of his materials Cudworth is quite uncritical and frequently clumsy. He was, with Henry More (q.v), the chief of the Cambridge Platonists (q.v.). Cudworth's most interesting contribution to philosophy was his doctrine of a plastic nature which contains the germs of all finite things. These arise from it by the action of God. Against Hobbes (q.v.) Cudworth maintained that the moral and intellectual, as well as the physical, nature of things was not due to convention or custom and was not changeable by any being at will, not even by God. Things are what they are, not by will but by nature, e.g., moral truth is not, as Hobbes argued, a mere result of custom and legislation.

CUE, n. *kū* [F. *queue*, a tail, a handle]: a braided tress of long hair, growing from the crown of the head, and dangling down the back; the end of a thing: the last words of the preceding speech written with the speech of an actor, in order to let him know when he is to proceed with his part, marked with the letter Q as an abbreviated form; a hint; an intimation; a short direction; the straight rod used at billiards; humor, as to be in the *cue* *Note.*—The obsolete *cue*, meaning 'a farthing,' arose from the sound of the letter *q*, the initial of L. *quadrans*, a fourth part, a farthing.

CUENCA, *kwĕn'kâ:* mountainous, well-watered province of Spain; yielding excellent timber, honey, wine, and grain, with good pasture, and various minerals, including iron, coal, copper, and silver; 6,722 sq. miles. Pop. (1900) 249,696.

CUENCA: city of Spain, at the confluence of the Jucar and Huecar, about midway between Valencia and Madrid. It is romantically situated on a rocky eminence, 3,400 ft. above the level of the sea, surrounded by hills. It appears to have derived its name [L. *concha*, a shell] from its position and appearance. Ford says it is 'indeed a hill-girt *shell*.' The town is of Moorish origin. The streets are narrow and crooked. The chief buildings are the cathedral, the bishop's palace, and a fine bridge over the Jucar (erected 1523), connecting the city with the convent of San Pablo. Cuenca was celebrated for arts, literature, and industry, but its glory has now quite departed. It suffered much during the Peninsular campaign. Pop. 8,200.

CUENCA: city of Ecuador, S. America; on a wide plain or table-land, 8,640 ft. above the sea. It is 85 m. s.s.w. of Quito, cap. of the republic; lat. $1\frac{1}{4}°$ s.—its proximity to the equator being largely neutralized, with regard to climate, by its altitude. It has a cathedral and a university. Pop. estimated 30,000.

CUERPO, n. *kwār'pō* [Sp.]: the body or body-clothing, distinguished from the outer garments: *in cuerpo*, so dressed as to show the body's contours.

CUERNAVACA, *kwăr-nä-vä'kä*, Mexico, the capital city of the state of Morelos and the chief town of the district of Cuernavaca; situated on the river Tepeyte, about 40 miles from the city of Mexico. The Palace of Cortés, where the state legislature meets, is one of its noteworthy buildings; also the meteorological observatory and the public library. Both the city and district have a large trade in the products of the region. Pop. city 8,747; district 40,014.

CUEVA, *kwā'vâ*, Beatriz de la: d. 1541, Sep. 11; b. Spain: wife of Pedro de Alvarado. She was the second wife of the conqueror of Guatemala, and after his death, 1541, July, was elected to succeed him as head of the govt. by the council of the colony. The day after her inauguration she was killed during the destruction of the city by earthquake and flood.

CUEVA DE VERA, *kwā'vâ dā vā'râ:* town of Spain, province of Granada, 42 m. n.e. of Almeria; on a plain on the right bank of the Almanzor, near its entrance into the Mediterranean. It is generally well built, and its streets are regular. The principal edifices are an old Moorish castle, and the parish church in the Doric style. The town has manufactures of hardware, earthenware, and of wine and oil; and many persons are employed in mines in the vicinity. Pop. 20,644.

CUERVO-MARQUEZ, Luis, *loo-ēs kwăr'vō mär'kēs*, Colombian diplomat and physician: b. Bogota, Colombia, 1864. He was educated in Bogota and Paris, France, graduating from the Escuela de Medicina of Bogota and the Faculté de Médecine of Paris. He has been in the diplomatic service of his country since 1888, serving a part of

the time as *charge d'affaires ad interim* in the United States. He has written numerous articles in the literary and professional journals of South America, and published: *La Fiebre Amarilla* (1891); *Paludisme* (1893).

CUEVAS DAVALOS, *kwā'vâs dâ-vâ'lōs*, Alonzo: 1590, Nov. 25—1665, Sep. 2; b. Mexico City: Rom. Cath. bp. He was educated at San Ildefonso College, and became prof. of theology in the Univ. of Mexico, first prebend of the Puebla Cathedral 1635, bp. of Oaxaca, and abp. of Mexico City 1664. He was the first native Mexican exalted by the church to that high office, and noted for his charitable and educational labors as well as for his rare executive abilities.

CUFF, n. *kŭf* [Hamburg, *kuffen*, to box the ears: It. *schiaffo*, a cuff, a clap with the hand on the cheek: Sw. *kuffa*, to thrust, to knock]: a blow with the clenched hand or fist; a box or stroke: V. to strike with the fist or clenched hand, or with wings, as a bird. Cuf'fing, imp. Cuffed, pp. *kŭft*.

CUFF, n. *kŭf* [Dan. *klap*, a flap: Sw. *klaff*, anything that hangs broad and loose: OF. *cœffe*, head-dress]: the part of a sleeve which flaps or claps back; a wrist-band.

CUFFEE, *kŭf'fē*, Paul: 1757–1812, Mar. 7; b. Montauk, L. I.: Indian preacher. He belonged to the Shinnecock tribe of Indians which at one time occupied a large part of Long Island, was educated by the New York Missionary Soc., and was the fourth missionary employed by it for service in his tribe. He was a man of great activity and influence, and preached among his people with considerable success for 13 years.

CUFFEE, Paul: 1759–1818, Sep. 7; b. near New Bedford, Mass.: son of a Negro slave and an Indian mother. At an early age he became a member of the Society of Friends, and adopted a sea-faring life, in which he gained wealth. He subsequently applied much of his time and money to the colonization of liberated American slaves on the w. coast of Africa; visited the region in his own ship to select a location, 1811, and took out and established a colony, 1815. He died while negotiating with the British govt. for permission to locate similar colonies in Sierra Leone.

CUFIC, a. *kū'fĭk* [from *Cufa*, the city where it was most early in use]: an Arabic alphabet so called: see Kufic Writing.

CUI BONO? *kī'bō'nō* [L. for whose good?]: a common expression signifying, 'for whose benefit? often improperly used in the sense of, 'what's the good? what's the use?'

CUICHUNCHUL' (*Ionidium parviflorum*): Peruvian plant of the nat ord. *Violaceæ*, half-shrubby, with minute leaves, possessing very active emetic and purgative properties, and said to be a certain remedy for *Elephantiasis tuberculata*. Other species of *Ionidium* share the same

name, properties, and reputation. One of them was formerly supposed to yield ipecacuanha, and its root is still known as White ipecacuanha: see IPECACUANHA.

CUIRASS, n. *kwĭ-răs′* [F. *cuirasse*—from *cuir*, leather—from It. *corazza*—from mid. L. *corātĭă*, a breastplate—from L. *corĭŭm*, hide, leather]: originally a jerkin, or garment of leather for soldiers, so thick and strong as to be pistol-proof, and even musket-proof; afterward, a portion of armor made of metal, consisting of a back-plate and breast-plate hooked or buckled together; with a piece jointed to the back called a *culet* or *garde de reines*. CUIRASSIERS, n. *kwĭ-răs-sér′*, in the time of Queen Mary, heavy horsemen wearing body-armor over buff-coats. They carried swords and pistols, and the reins were strengthened with iron chains. In modern armies, the name is often given to the heaviest cavalry. Napoleon's 12 regiments of cuirassiers attracted much attention during his wars. The first rank of Russian cuirassiers are armed with lances. The only cuirassiers in the British army (wearing the cuirass) are the Life Guards (red) and Horse Guards (blue).

CUISINE, *kwĭ-zēn′* [F. *cuisine*—from It. *cucina;* Sp. *cocina*—from mid. L. *coquina* or *cocina*, a kitchen—from L. *coquo*, I boil, I cook: comp. AS. *cycene*, a kitchen]: the kitchen; the cooking department.

CUITLALMATZIN, or CITLALMATZIN, Aztec ruler: b. 1470; d. 1520, October. He was the younger brother of Montezuma, and after the latter's death, succeeded to the throne, but lived only a few weeks. He was a prisoner in the hands of the Spaniards with his brother, but succeeded in escaping or was released. He organized an active resistance to the invaders and in one of the attacks upon them, Montezuma was killed. The warfare he instituted resulted in the defeat of the Spaniards for the time being, and their retreat to the coast.

CUITLE, v. *kū′tl* [Scot.]: to tickle, to coax.

CUJACIUS, *ku-jā′shĭ-ŭs*, properly JACQUES DE CUJAS, or CUJEUS: distinguished jurist: 1522–1590, Oct. 4; son of a tanner of Toulouse. After studying law, he was appointed teacher of the same at Cahors (1554), and in the following year, by the recommendation of the Chancellor L'Hopital, gained the chair of law in the univ. of Bourges. In 1557, he became prof. at Valence. After several changes, he returned to Bourges, 1577, where he resided till his death.

His great reputation as a jurist was founded on his study of original MSS. of the Roman laws, and on his classical treatment of these authorities. He had in his library 500 MSS. on Roman law, and by his emendations contributed greatly to remove the obscurities of jurisprudence. A complete collection of his works was edited by Fabrot (10 vols. Par. 1658), and has since been republished frequently. Uhl has edited separately Cujacius's *Animadversiones et Observationes*.

CULDEE, n. *kŭl'dē*, also KELDEE [Gael. *Cuilteach*, a Culdee: Ir. *ceilede*, a servant of God, a Culdee: Gael. *gille De*, servant of God: mid. L. *Culdēī*, corrupted from L. *cultor Dēī*, a worshipper of God]: ancient monkish priest whose order ministered in Ireland, Scotland, and Wales, and are thought to be traceable at one or two points in England. CULDEAN, a. *kŭl-dē'ăn*, pertaining to the anc. Culdees or their doctrines.—The word Culdee seems of Celtic origin, and in the Irish language signifies an 'attendant of God.' Giraldus Cambrensis, writing toward the end of the 12th c., when the order still flourished, interprets the name in one place by the Latin word *cœlicola*, i.e., 'worshipper of heaven;' and in another by *cœlebs*, i.e. 'single,' or 'unmarried.' Boece and Buchanan, in the 16th c., translate it *cultores Dei*, i.e. 'worshippers of God.'

There is some uncertainty as to the first appearance of the order. There is no trace of it in the works of Adamnan, of Bede, of Alcuin, or of any other ecclesiastical historian of the 8th or 9th c. An abbot and bishop of the north of Ireland, who compiled a metrical calendar of Irish saints about A.D. 800, was known in his own time as 'Ængus the Ceile-De.' But it has been questioned whether the title was not used rather to denote his great personal piety, than to describe his ecclesiastical character. The Four Masters, again, in their *Annals of Ireland*, compiled about 1636, record certain great wonders wrought by a Ceile-De in the year 806. But no such event is recorded in the ancient chronicles from which the Four Masters compiled their work, and Irish antiquaries think that the passage must therefore be rejected as apocryphal. But in Irish annals of undoubted authority, it is chronicled that, in 919, 'a Ceile-De came across the sea westward to establish laws in Ireland;' in other words, as Irish archeologists conjecture, to bring the Irish into conformity with the rule for canons which had been enacted in 816, at the council of Aix-la-Chapelle. The annals of Ulster record that, in 920, Armagh was plundered by Godfrey, son of Ivor, the Dane, but that he spared the oratories with the C. and the sick. The Culdees of Armagh, who thus appear in the beginning of the 10th c., survived till the beginning of the 17th c. Abp. Usher (died 1655) writes that they continued until within his own memory. They were secular priests or canons, about 12 in number, living in community, under the rule of a prior, who—after the beginning of the 13th c., when the metropolitan cathedral of St. Patrick was remodelled after the English fashion—officiated as precentor, his Culdees being the clerks or choir. The antiphonary or service-book, with the musical notation, from which they sang, is still preserved in the library of Trinity College, Dublin; and its calendar records the deaths of several of their number, one of them so lately as 1574. The prior seems generally to have been a pluralist, it having been formally ruled in 1448, after an appeal to Rome, 'that the priory of the college of secular priests, commonly called Culdees, being a simple office, and without cure of souls, is not incompatible with a benefice.' The Culdees of Ar-

magh, dissolved at the Reformation, 1541, were resuscitated for a brief space, 1627. Their old possessions—among which were seven town-lands containing 1,423 acres, seven rectories, and four vicarages — were, 1634, bestowed upon the vicars choral of the cathedral, who still hold them.

There were at least seven other houses of Culdees in Ireland, viz., at Clonmacnois, Clondalkin, Devenish, Clones, Popull, Monanincha, and Sligo.

If tradition be trusted, the first appearance of Culdees in Scotland should be placed about the middle of the 9th c. A leaf of the Register of St. Andrews, written about 1130, relates that Brude, the son of Dergard, last king of the Picts (ceased to reign about 843), gave the island, since called St. Serf's Inch, in Lochleven, to God, St. Servan, and the Culdee hermits serving God there. They were governed by an abbot: and about 1093, during the rule of Abbot Ronan, they gave up their island to the Bp. of St. Andrews, on condition that he should find them in food and raiment. They had grants of lands or immunities from all the kings of the Scots who reigned 1039–1153, the roll of these royal benefactors being headed by the renowned Macbeth (1039–56) and his wife Gruoch, daughter of Bodhe. They had a grant of a church from each of the three bishops who ruled the see of St. Andrews, 1040–93; and about 1120, they had a grant of lands from one of the sons of King Malcolm Canmore and St. Margaret—Ethelred, Earl of Fife, and hereditary lay-abbot of the Culdee monastery of Dunkeld. A few years afterward, the Bp. of St. Andrews gives their island, and all their possessions, including their church vestments and their books, to the newly founded Canons Regular of St. Andrews, in order that a priory of that rule might supplant the old abbey of Culdees in St. Serf's Inch. About 1140, the bishop's grant was enforced by a charter from King David, in which it was ordered that such of the Culdees as chose to live canonically and peacefully under the new canons should remain in the island. 'If any one of them refuse so to do,' says the king, 'my will is, and I command, that he be expelled from the island.' We hear no more of the Culdee hermits of Lochleven. The Canons Regular who came in their place continued till the Reformation, and we are indebted to one of their priors, Andrew Wyntoun (died about 1429) for a valuable metrical Chronicle of Scotland. A catalogue of the books of the Culdee abbey, when it was bestowed upon the Canons Regular of St. Andrews, about 1140, has been preserved. The number of volumes was not quite 20. They were—a Pastoral, a Gradual, a Missal, some of the works of Origen, the Sentences of St. Bernard (still living), a Treatise on the Sacraments, in three parts, a part of the Bible, a Lectionary, the Acts of the Apostles, the Gospels, the works of Prosper, the books of Proverbs, Ecclesiastes, and Canticles, a Gloss on the Canticles, a work called *Interpretationes Dictionum*, a Collection of Sentences, a Commentary on Genesis, and a Treatise on the Exceptions from Ecclesiastical Rules.

The Culdees of St. Andrews were of more importance, and not perhaps of less antiquity, than those of Lochleven. The death of an abbot of St. Andrews is chronicled by the Irish annals in 747. It is not said that he was a Culdee; but in 944, when Constantine, king of Scots, exchanged his crown for a monk's cowl, it is recorded that he became 'abbot of the Culdees of St. Andrews.' No more is heard of them till about the middle of the 12th c. A priory of Canons Regular had now been planted beside them, and from its records we learn that in the church of St. Andrew, such as it then was, there were 13 Culdees holding their office by hereditary tenure, and 'living rather according to their own pleasure and the traditions of men, than after the rules of the holy fathers;' that some few things of little importance they possessed in common; that the rest, including what was of most value, they held as their private property, each enjoying what he got from relatives and kinsmen, or from the benevolence granted on the tenure of pure friendship, or otherwise; that after they became Culdees they were forbidden to have their wives in their houses, or any other women of whom evil suspicion could arise; that the altar of St. Andrew was left without a minister, nor was mass celebrated there except on the rare occasion of a visit from the king or the bishop, for the Culdees said their own office after their own way in a corner of the church. The attempt to supplant the Culdees by Canons Regular, which had succeeded at Lochleven, was repeated at St. Andrews, but failed. The Culdees kept their own church—St. Mary's, or the Kirk of the Heugh—and had a voice with the Canons Regular in the election of the bishop. Their abbot disappears about the middle of the 11th c.; and soon afterward their 'prior' exchanges that title for the name of 'provost.' Their distinctive character was gradually passing away; before the end of the 14th c. they lose their share in the election of the bishop; their name of Culdee is heard no more; their church, about the same time, takes the name of the King's Chapel-royal; and henceforth there remains nothing to distinguish them from the secular priests of other collegiate churches.

The Culdees of the church of St. Mary at Monymusk, in Aberdeenshire, appear to have been founded by the Bp. of St. Andrews toward the end of the 11th c. In the beginning of the 13th c. they are found making claim to be regarded as Canons Regular The claim was resisted by the Bp. of St. Andrews, and 1211, after an appeal to Rome, the dispute was settled by a compromise, which provided that there should be 13 Culdees at Monymusk, of whom one—to be chosen by the bishop from a list of three presented by the other Culdees—should be the master or prior; that they should have a refectory, a common dormitory, and an oratory, but no cemetery; that they should not adopt the monastic or canonical life or rule without leave of the bishop; and that when he came to Monymusk, he should be received by the Culdees in solemn procession. Before this agreement is 50 years old, the

name of Culdees disappears from Monymusk, and their house is recognized as a priory of Canons Regular.

Culdees are found at Abernethy, in Strathearn, about 1120. In the end of that c., their possessions appear to have been divided between their hereditary lay-abbot (the founder of the noble family of Abernethy) and the prior and Culdees by whom the burden of the ecclesiastical offices was borne. In 1273, they were transformed into Canons Regular. The same partition of the Culdee revenues which appears at Abernethy, is found at Brechin. A layman, abbot only in name, inherits a large share of the Culdee patrimony, and transmits it to his descendants, who soon lose even the name of abbot. The prior and his Culdees, meanwhile, are absorbed into the chapter of the new bishopric, founded at Brechin by King David I., about 1145; in less than a hundred years, the name of Culdees disappears, and the chapter is one wholly of secular canons. The same silent change of Culdees into secular canons, which took place at Brechin during the 13th c., took place also at Dunblane, at Dunkeld, at Lismore, at Rossmarky, and at Dornoch. Culdees are found in the bishop's chapter at each of these places in the 12th c.; they disappear before the end of the 13th c., leaving the chapter one of secular canons. At Dunkeld, as at Brechin and at Abernethy, great part of the Culdee revenues was held by a lay-abbot, whose office was of such mark as to be hereditary in the royal family. The father of 'the gracious Duncan,' and the son of St. Margaret, were Culdee abbots. If a tradition of the 16th c. can be received as authority for what passed in the 12th c., the Culdees of Dunkeld were married, like the priests of the Greek Church, but lived apart from their wives during their period of service at the altar.

Culdees are found holding land at Monifieth, near Dundee, about 1200; and there was a lay-abbot of Monifieth; but there is nothing to show whether he was or was not a Culdee. The Culdees of Muthill, in Strathearn, appear with their prior in charters of the beginning of the 13th c. Nothing more is known of them. Jocelin of Furnes, in his Life of St. Kentigern, or Mungo, written about 1180, relates that the disciples of that saint at Glasgow, in the 6th c., had all things in common, but lived each in his own hut, whence they were called 'solitary clerks,' and more commonly 'Culdees.' They appear as one of the ecclesiastical fraternities of Iona, 1164; and the faint vestiges of a circular building (about 15 ft. in diameter) called 'Cothan Cuildich,' or the Culdee's cell, are still shown in the island.

Only one or two traces of the order have been observed in England. The canons of St. Peter's, at York, were called Culdees in the reign of Æthelstan (924–931); and a charter of Æthelred, 1005, speaks of the canons of the English cathedrals generally as *cultores clerici*. The term is of doubtful import, and the charter itself is not beyond suspicion.

Of the Culdees in Wales, we have only one notice. Giraldus Cambrensis, writing about 1190, describes the

island of Bardsey, on the coast of Cærnarvon, as inhabited by 'most devout monks, called celibates or Culdees.'

Such is a concise recapitulation of all that is certainly known of the Culdees. Before their history was ascertained, opinions were held regarding them which now find few if any supporters among archeologists. It was believed that they were the first British teachers of Christianity; that they came from the East before corruption had yet overspread the church; that they took the Scripture for their sole rule of faith; that they lived under a form of church-government approaching Presbyterian parity; that they rejected prelacy, transubstantiation, the invocation of saints, the veneration of relics, image-worship, and the celibacy of the clergy; and that they kept their simple worship and pure doctrines undefiled to the last, and were suppressed only by force and fraud, when the Rom. Cath. Church triumphed over their older and better creed. For all this, it is now clearly seen that there is no foundation. There is no reason to suppose that the Culdees differed in any material point of faith, discipline, or ritual from the other clergy of the British islands and Western Christendom. Their name was their only peculiarity.

The best account of the Irish Culdees is in a dissertation by the Rev. Dr. Reeves, in the *Proceedings of the Royal Irish Acad.* for 1860. The best account of the Scottish Culdees is in Mr. Grub's *Ecclesiastical History of Scotland*, I, 226–243 (Aberd. 1861). The opinions formerly held regarding the Scottish Culdees will be found in Seldon's preface to the *Decem Historiæ Anglicanæ Scriptores*, reprinted in his *Opera* II, 1129–46; Sir J. Dalrymple's *Collections concerning the Scottish History* (Edin. 1705); and the late Rev. Dr. Jamieson's *Historical Account of the Ancient Culdees* (Edin. 1811). The opinions of these writers are controverted in Bp. Lloyd's *Historical Account of Church Government*, chap. vii; Goodall's *Preliminary Dissertation*, and Bp. Russell's *Supplement*, prefixed to Keith's *Catalogue of Scottish Bishops* (Edin. 1824); Pinkerton's *Inquiry into the Early History of Scotland*, II, 270–273 (edit. 1814); and Chalmers's *Caledonia*, I, 434–439 (Lond. 1807). On the subject of the C. generally, reference may be made to Lanigan's *Ecclesiastical History of Ireland*, IV; to the dissertation by J. van Hecke in the *Acta Sanctorum Octobrit*, VIII; and to Skene's *Celtic Scotland*, II.

CULIACAN, *kô-lē-â-kân′:* town of the Mexican confederation, on a river of its own name, which, flowing s.w., enters the Gulf of California near its mouth. It occupies a fertile tract in the dept. of Sinaloa, about 90 m. s.e. of the the city of Sinaloa. Pop. 10,487.

CULICIDÆ, n. plu. *kū-lĭs′ĭ-dē* [L. *culex*, gen. *culicis*, a gnat, a midge; suf. *-idæ*]: family of dipterous insects, tribe *Nemocera*. The family contains the gnats, the midges, and the mosquitoes.

CULILAWAN BARK, *kū-lĭl'a-wan bârk*, or CLOVE BARK: valuable aromatic bark, product of the *Cinnamomum Culilawan*, tree of the same genus with the Cinnamon (q.v.) tree; growing in the Molucca Islands.

CULIN, STEWART, American anthropologist: b. Philadelphia, Pa., 1858, July 13. He is curator of the Museum of Science and Art of the University of Pennsylvania. Besides many minor papers, he has written two very able monographs, *Korean Games* (1896); and *Chess and Playing Cards* (in Report of the United States National Museum 1896); also an essay on *Mancala, the National Game of Africa* (in Report of the United States National Museum 1894).

CULINARY, a. *kū'lĭ-nėr-ĭ* [F. *culinaire*, culinary—from L. *culīna*, a kitchen]: pertaining to the kitchen, or the art of cookery; used in the kitchen.

CULINARY TERMS: the following are among the terms that are used frequently in relation to culinary matters that are not generally understood:

ASPIC, *ăs'pĭk*.—A savory meat jelly.

ASSIETTE, *ăs-sĭ-ĕt'*.—A small entree that can be served on a single plate.

ATTELLE, *ăt-tĕl'*.—A small silver skewer.

ATTEREAUX, *at-tĕr-rō'*.—Dishes prepared in haste; also, the practice of cooking dainty scraps by broiling them on skewers.

AU BLEU, *ō-blė'*.—A term applied to fish, indicating that it was boiled in a mixture of white wine and water, flavored with herbs.

AU FOUR, *ō-fôr*.—Baked in the oven.

AU GRAS, *ō-grâ*.—Dressed with a rich gravy.

AU GRATIN, *ō-grăt-ăng*.—Prepared with crumbs—often with cheese—and sauce before being baked.

AU JUS, *ō-zhüs*.—Cooked in the natural juice, or gravy of the meat.

AU MAIGRE, *ō-māgr*.—Without meat.

AU NATUREL, *ō-nă-tü-rĕl'*.—A term applied to dishes that have been cooked as plainly as possible.

BABA, *bâ'bâ*.—A kind of very light plum cake.

BAIN-MARIE, *băn-mä-rē'*.—Practically a double-boiler.

BALLOTTINE, *băl-lŏt-tēn'*.—Small balls made of meat, or poultry.

BARDE, *bârd*.—To cover meat or poultry with thin strips of pork, or bacon fat, before cooking.

BISQUE, *bĭsk*.—A kind of soup, usually made with shell fish.

BLANCH, *blănch*.—To put meats, or other foods, first into boiling water, and afterwards into cold.

BOUILLEBAISSE, *bô-yē-bās'*.—A kind of fish stew; practically a national dish in the South of France.

BOUILLON, *bô-yŏng'*.—Beef broth. The beef from which the broth has been extracted is termed the 'bouilli.'

BRAISE, *brāz*.—A method of stewing meat without per-

mitting any perceptible evaporation. It is supposed to greatly improve the flavor of the meats.

Braissiere, *bräs-yĕr′*.—A long, deep copper vessel, with a concave lid upon which coals of fire are heaped.

Bouquet, *bō-kā′*.—Sometimes known as 'garnish,' or 'faggot.' It consists of a small bunch of parsley, six green onions, a bayleaf, and a sprig of thyme, all tied together with twine or a bit of straw, and is, of course, used for seasoning purposes.

Bourgeoise, *bôr-zhwâz′*.—(a la).—In the family style.

Brochée, *brō-shā′*.—Meat cooked upon the spit.

Brochette, *brō-shĕt′*.—A skewer.

Café, *kâ-fā′*.—Coffee.

Café au lait, *kâ-fā-ō-lā*.—Coffee with hot milk and sugar.

Café noir, *kâ-fā-nwawr*.—Strong black coffee.

Canapé, *kâ-nâ-pā′*.—A piece of toasted bread with some savory substance spread over it.

Cannelons, *kă-nĕ-lŏng′*.—Small rolls of minced meat, or rice and pastry with fruit.

Caramel, *kăr′ă-mĕl*.—Burnt sugar; often used for coloring.

Casserole, *kăs′ĕ-rōl*.—An earthen stew-pan; also, a form of rice, or macaroni to be filled with meat, poultry, game, or other material.

Charlotte, *shâr′lŏt*.—Very thin slices of bread, steeped in clarified butter, and placed in a mold, garnished with fruit or preserves. Charlotte Russe consists of cake layers filled with cream or fruit.

Chartreuse, *shâr-trėz′*.—(1) A mixed preparation of vegetables symmetrically arranged in a mould garnished with game, etc. (2) Fruit or vegetables dished up in goblet shape.

Chateaubriand, *shō-tō-brē-ăn′*.—A fillet steak.

Civet, *sĭv′ĕt*.—A game stew.

Cock-a-leekie, *kŏk′-ă-lēk-ē*.—The national soup of Scotland; it is made of fowl and leeks.

Compôte, *kŏm′pōt*.—Usually applied to fruits that have been stewed or preserved in syrup, although also used to designate savory dishes made of game with mushrooms, peas, etc.

Consommé, *kŏn-sŏm-ā′*.—A clear, strong broth.

Croquettes, *krō-kĕts′*, and Rissoles, *rē-sōl′*.—A mince of meat coated with breadcrumbs and fried crisp.

Coquilles, *kō-kē-y*, or *kō-kēl′*.—A light entree served in shells.

Croustades, *krôs-tâd′*.—Shapes of bread or pastry—sometimes fried—used in serving meat or game minces.

Croutons, *krô-tōn′*.—Small pieces of bread fried and used in garnishing.

Curry, *kŭr′ĭ*.—A dish of meat, or other substance, that has been flavored with curry powder.

Daubé, *dō-bā′*.—Meat or poultry stewed.

Demi tasse. *dĕm′ĭ-tâs*.—A half cup.

CULINARY TERMS.

DIABLE, *dē-âbl′*.—(a la), or devilled.—Dishes that have been prepared with a hot and sharp seasoning.

ÉCLAIR, *ā-klär′*.—French pastry filled with a cream.

ENTRÉE, *ŏn-trā′*.—A conventional term for side dishes served after the fish.

ENTREMETS, *ŏn-tre-mā′*.—Second-course side dishes, served between the roast and the dessert.

EPIGRAMMES, *ĕp′ĭ-grâm*.—Small fillets of meat, poultry, or game served as entrees.

ESCALOPES, *ĕs-kâl′ŏp*.—Small, thin, and round slices of meat served as an entree dish.

FANCHONNETTES, *fân-shŏn-ĕt′*.—Sometimes called 'Florentines'. A kind of meringued tartlet.

FARCE, *fârs*.—A coarse kind of forcemeat.

FILETS MIGNONS, *fē-lā-mēn-yŏn*.—Inside small fillets.

FLAN, *flâng*.—A French custard.

FOIE-GRAS, *fwaw-grâ*.—Fat goose livers.

FONDUE, *fŏn-dū*.—A light preparation of melted cheese.

FRAPPÉ, *frâ-pā′*.—Semi-frozen.

FRICASSEE, *frik-ă-sē′*.—Dishes cooked by a process very similar to stewing.

FROMAGE, *frō-mâzh′*.—Cheese.

GALANTINE, *găl-ăn-tēn′*.—Meat that has been boned, tied in a cloth and boiled. It is served cold.

GATEAU, *gâ-tō′*.—A light cake, or pudding.

GLAZE, *glāz*.—Meat stock that has been reduced by boiling to the consistence of jelly.

HARICOT, *ăr-ĭ-kō′*.—A thick stew composed of meat cut into pieces, and dressed with vegetables, etc.

HODGE-PODGE, *hŏj′pŏj*.—A meat stew.

HORS D′ŒUVRE, *awr-dėvr*.—A small dish served at the beginning of dinner as an appetizer.

LARD′ING.—Inserting small strips of fat pork, or bacon, through meats or fowl. The piece of fat used is called a 'lardon.'

LIAISON, *lē-ā-zŏng′*.—A mixture composed of eggs, cream, etc., used for thickening purposes.

MACEDOINE, *mâ-sĕ-dwawn′*.—A mixture of vegetables, or fruits.

MADELEINES, *măd′lĕn*.—Small, light cakes, baked in tartlet molds.

MARINER, *mâ-rē-nā′*.—The preservation of meats, or fish, in vinegar, or oil, with herbs.

MARINADE, *mâ-rē-nād′*.—The process of preparing meats for cooking by previous applications of oil, vinegar and herbs.

MASK.—To cover a dish of meat with a rich sauce.

MAYONNAISE, *mī-ō-nāz′*.—A salad dressing which must contain the yolks of eggs as one ingredient.

MENU, *mā-nü′*.—The bill-of-fare.

MERINGUE, *mĕ-răng′*.—An icing made of egg and sugar.

MIROTON, *mē-rō-tōng′*.—Cold meats, warmed over, and served in a circular form.

MOUSSE, *moos*.—A frozen dainty, resembling ice cream.

NEIGE, *nāzh.*—The whites of eggs beaten to a stiff froth.

NOODLES, *nôd'lz.*—Strips of paste made of eggs and flour.

PANER, *pâ-nā'.*—To cover with breadcrumbs.

PAPILLOTE, *pâp-ĕ-yot'.*—Meats enveloped and broiled or fried in paper.

PARFAIT, *pâr-fā.*—Perfect.

PATÉ, *pâ-tā'.*—Pie, pastry.

PETIT, *pĕ-tē'.*—Small.

PIECE DE RESISTANCE, *pē-ĕs-dė-rā-zĭs-tâns'.*—The principle joint at dinner.

PLOMBIERE, *plŏng-bē-ar'.*—An ice cream into which candied fruits are mixed.

POTAGE, *pō-tâzh.*—Soup.

PURÉE, *pü-rā'.*—A dish in which the ingredients have been mashed through a sieve.

PRINTANIERE, *prăn-tâ-nē-är'.*—A dish, served with early Spring vegetables.

QUENELLES, *kĕ-nĕl'.*—Small balls made of pounded meat.

RAGOUT, *râ-goo'.*—A rich meat stew.

RISSOLES, *rē-sōl'.*—Small pastry with minced meat.

ROUX, *rô.*—A mixture of fresh butter and flour, which is used for thickening sauces.

SALMIS, *sâl'mē.*—A hash made of previously cooked game.

SALPICON, *sâl-pē-kŏng'.*—A mince used for croquettes, etc.; usually made of game or poultry, with ham, mushrooms, etc.

SAUTÉ, *sō-tā'.*—To lightly fry in butter.

SORBET, *sŏr-bā'.*—Frozen water ice.

SOUFFLÉ, *sô-flā'.*—Something extremely light, as a pudding, or omelet.

TIMBALE, *tăngbâl.*—A kind of pie that is baked in a mold.

TRIFLE, *trī'fl.*—A sweet dish, generally composed of sponge cake with fruits, jams, whipped cream, or some similar accompaniment.

TURBAN, *tur'băn.*—Slices of chicken and forcemeat served ornamentally.

VOL-AU-VENT, *vōl-ō-vâng.*—The lightest kind of puff-paste, usually filled with an especially delicate ragout.

ZWIEBACK, *zvē'bâk.*—Bread that has been twice toasted.

CULL, v. *kŭl* [F. *cueillir*, to pluck or gather—from OF. *coïllir* and *cuillir*, to cull—from L. *colligĕrĕ*, to bind together, to collect—from *legĕrĕ*, to gather]: to pick out; to gather; to select from many. CUL'LING, imp. CUL'LINGS, n. plu. selections from a mass; refuse. CULLED, pp. *kŭld.* CUL'LER, n. one who. CUL'LERS, n. plu. *-ėrz*, the worst of a flock culled out for disposal.

CULLEN, *kŭl'en*, PAUL, D.D., Cardinal: 1803, Apr. 27—1878, Oct. 24; b. Dublin. He was educated in the College of the Propaganda at Rome, and became prof. of Hebrew

there after ordination, and then rector of the Irish College, and held the latter office many years. As a foreign rector he was allowed to remain in the city during the exciting days of 1848, and at one time saved the Propaganda and Irish colleges from destruction by placing them under the American flag. He was appointed Rom. Cath. bp. of Armagh and Primate of all Ireland, 1850, transferred to Dublin 1851, and created cardinal 1866, June. He was the first Irish bp. raised to the cardinalate since the Reformation, and the first cardinal educated in the College of the Propaganda. In the last Vatican Council he advocated the dogma of papal infallibility.

CULLEN, WILLIAM, M.D.: 1710, Apr. 15—1790, Feb. 5; b. Hamilton, Lanarkshire, Scotland: physician, celebrated professor of medicine in the universities of Edinburgh and Glasgow. His father was factor to the Duke of Hamilton, and had a little landed property in the parish of Bothwell; he appears to have brought up two of his sons to the learned professions, and to have himself received a legal education. William began medical studies in Glasgow by an apprenticeship, and by attending literary classes in the university. In 1729, Cullen was appointed surgeon to a merchant-ship; and till 1734, was actively engaged in various situations. He then spent two winter-sessions in Edinburgh in the regular study of medicine, and was one of the founders of the Royal Medical Soc., composed of students. In 1736, he commenced practice at Hamilton, and soon was largely employed, having the patronage of the Duke of Hamilton. Soon afterward, William Hunter (see HUNTER, JOHN and WILLIAM) passed three years under Cullen's roof, the beginning of a lifelong frendship, though after Hunter went to London, it is probable that they never again met. In 1740, Cullen took the Degree Doctor of Medicine in the univ. of Glasgow; in 1741, he entered into partnership with a surgeon, with the view of confining himself to a physician's practice; in 1744 in response to an invitation, he removed to Glasgow, where he soon began a course of lectures. It seems certain that to Cullen Glasgow Univ. owes the real commencement of its medical school; for in one or two years succeeding 1746, he made arrangements with the several professors to lecture on the theory and practice of physic, on botany and the materia medica, and finally on chemistry, these being the first medical lectures in the university. In botany, Cullen seems to have lectured in Latin; but in the other departments English, an innovation, which permitted a familiar style not before in use.

In 1751, Cullen was placed, through the influence of the Duke of Argyle, for the first time in his rightful position as a prof. in the univ. of Glasgow, and later elected prof. of chemistry at Edinburgh. In 1757, he added to his duties the teaching of Clinical Medicine in the Royal Infirmary. Probably, the fact of his having

to give bedside instruction at this period opposed itself to the natural tendency of his mind to give everything a systematic form, and weeded his method of practice of an immense quantity of the scholastic rubbish which made up so much of the medical learning of that age. In 1760 he undertook the lectures on materia medica with such acceptance that his lectures were surreptitiously printed from the notes of a pupil, and had considerable circulation. In 1766, Cullen was placed in the chair of Institutes of Medicine; and Black, now the greatest chemical discoverer of the age, was brought to Edinburgh from Glasgow to fill Cullen's place as prof. of chemistry. In 1773 Cullen was at last transferred to the chair of the practice of physic, the duties of which he had for some years performed in part.

In 1778, Cullen became the proprietor of Ormiston Hill, a pretty suburban estate about 8 m. w. of Edinburgh, where he passed in pleasing rural occupations as much time as his professional duties would allow. Here he died, having nearly completed his 79th year, and having been actively engaged in teaching and consulting practice till within a few months of his death. His most important works are, *First Lines of the Practice of Physic* (Edin. 1777); *Synopsis Nosologiæ Methodicæ*, 1785; *Institutions of Medicine*, 1777; *A Treatise of the Materia Medica*, 1789. Their characteristics are great clearness of expression, with remarkable soundness of judgment and common sense, rather than striking originality. Amid learned medical farrago, of his times, he sought his way toward the truth with remarkable impartiality and candor. His fame as one of the greatest of teachers has survived the memory of his professional success. His writings have been collected, in 2 vols. 8vo., by Dr. John Thomson (Edin. 1827), by whom also a Life was commenced (first vol. published 1832, second vol. by other hands, 1859).

CULLENDER, n. *kŭl'lĕn-dėr* [L. *colans*, straining; *cōlum*, a strainer: F. *couler*, to flow: Sp. *colar*, to filter]: a colander; a strainer.

CULLERA, *kôl-yā'râ:* fortified town of Spain, and port on the Mediterranean, 23 m. s.s.e. of the town of Valencia. It is near a very fertile district, and the inhabitants are engaged in agriculture, cattle-rearing, fishing, and the production of oil and wine. Pop. (1877) 11,050.

CULLET, or CULETTE, or CULET, n. *kŭl'ĕt* [F. *cueillette*, a gathering, a mixed cargo: or from CULI, to gather]: broken glass brought together for being remelted with fresh material: see CULL.

CULLION, n. *kul'yŭn* [see CULLY]: a mean wretch; a cully; a scoundrel. CUL'LIONLY, a. *-lĭ*, having the qualities of a cullion; base.

CULLIS, n. *kŭl'ĭs*, or COULIS, n. *kô'lĭs* [F. *coulis*, strained juice of meat, gravy, jelly]: a kind of rich brown

gravy, for enriching, thickening, and coloring certain soups and sauces; broth of boiled meat strained.

CULLODEN, *kŭl-lō′dĕn*, or DRUMMOS′SIE MOOR: desolate level tableland, now partly culitvated, in the n.e. of Inverness-shire, six m. e.n.e. of Inverness, near the Moray Firth; is memorable as the scene of the total defeat, 1746, Apr. 16, of the Highland army under Prince Charles Stuart by the Royal troops under the Duke of Cumberland, and the extinction of the hopes of the House of Stuart to regain the English crown. Since 1881, a cairn, 20 ft. in height, with an inscription, marks the spot where the battle was fiercest, and where many of the slain lie buried.

CULLOM, SHELBY MOORE, American senator: b. Wayne County, Ky., 1829, Nov. 22. In 1853 he went to Springfield, Ill., to study law, was admitted to the bar, and settled in practice there. He was in the Illinois House of Representatives 1856, 1860, 1872, 1874, and its speaker in 1861 and 1873. He was elected to Congress 1865-71. At the Republican national convention, 1872, he nominated Gen. U. S. Grant. He was governor of Illinois 1877-83, when he succeeded David Davis in the United States Senate, and has been four times re-elected. He was chairman of the senate committee which reported the Interstate Commerce Bill, and a member of the commission appointed to prepare a system of laws for the Hawaiian Islands. His report on the regulation of railroad corporations by national legislation, presented to the Senate, 1886, 18 Jan. has taken its place as a permanent contribution to economic literature.

CULLUM, GEORGE WASHINGTON, American military officer; b. New York 1809, Feb. 25; d. there 1892, Feb. 28. He was graduated from West Point in 1833; and was engaged for the next 28 years in engineering labors and in instructing at West Point in practical military engineering. During the Civil War he was chief of staff to the general-in-chief 1861-4, and superintendent of the military academy 1864-6. From that time he was a member of the board of engineers for fortifications, until he was placed on the retired list in 1874. At the time of his retirement he was colonel and brevet major-general in the regular army. Besides numerous military memoirs and reports, he published: *Military Bridges with India-rubber Pontoons* (1849); *Register of Officers of the U. S. Military Academy from* 1802 *to* 1850 (1850); a translation of Duparc's *Elements of Military Art and History*, with notes, etc. (1863); a *Biographical Register of the Officers and Graduates of the U. S. Military Academy* (1868) (revised edition 1879); *Campaigns of the War of* 1812 *Criticised* (1880). He bequeathed $250,000 for the erection of a memorial hall on the grounds of the military academy, and $40,000 for furnishing it with military busts, paintings, and other appropriate objects.

CULLY, n. *kŭl′lĭ*, also CUL′LION, n. *-yŭn* [OF. *couille*, a testicle: OF. *couillon;* Sp. *collon*, a vile fellow, a dastard

—from L. *culĕŭs*, a bag, the scrotum: comp. Gael. *cuilean*, a whelp]: the entertainer or companion of a courtesan; a soft-headed fellow; a man easily deceived or imposed upon: V. to make a tool of; to impose upon; to dupe; to trick. CUL'LYING, imp. *-lĭ-ĭng*. CUL'LIED, pp. *-lĭd*. CUL'LYISM, n. *-ĭzm*. CUL'LIBIL'ITY, n. *-bĭl'ĭ-tĭ*, easiness of being gulled.

CULM, n. *kŭlm* [L. *culmus*, the stalk of corn: It. *culmo*]: the stalk or stem of corn or grasses, usually hollow and jointed. CULMIFEROUS, a. *kŭl-mĭf'ĕr-ŭs* [L. *fero*. I bear]: having smooth jointed stalks, and their seeds contained in chaffy husks, as in wheat, oats, etc.: see GRASSES.

CULM, n. *kŭlm* [W. *cwlm*, culm: OE. *colmie*, black, foul]: an impure shaly kind of coal or anthracite shale. At one time disposal of the culm heaps surrounding the shafts of the mines in Pennsylvania, became a serious problem, until its use as fuel was made possible, either by burning it in special grates, or by pressing it into briquettes (q.v.). In England the culm is sometimes made up into balls, with one third of its bulk of wet clay. This mixture burns without flame, and gives a steady heat suitable for cooking. In botany culm is the straw or hollow stem of the grasses. CULMIF'EROUS, a. *-mĭf'ĕr-ŭs* [L. *fero*, I bear]: abounding in culm. CULM MEASURES, in *geol.*, the anthricate shales of North Devon.

CULMINATE, v. *kŭl'mĭ-nāt* [mid. L. *culmĭnātus*, culminated—from L. *culmen*, a top, a summit: F. *culminer*]: to reach the highest point; to be vertical; to come to the meridian; to top or crown. CUL'MINA'TING, imp.: ADJ. attaining the highest point. CUL'MINA'TED, pp. CUL'MINA'TION, n. *-nā'shŭn* [F.—L.]: crown; top; the most brilliant or highest point in the progress of any person or time; in *astronomy*, transit or passage of a star or planet across the meridian. The star is then at the highest point (*culmen*) of its course for the day. The sun culminates at midday, or 12 o'clock, apparent solar time—which seldom agrees exactly with mean time, as shown by a watch or clock. The full moon culminates at midnight. The time of culmination of a fixed star is always exactly midway between the times of its rising and setting; in the case of the sun, moon, and planets, it is only nearly so.

CULNA, *kŭl'na:* town of Bengal, 47 m. n. of Calcutta, on the right bank of the Hooghly. The town contains a vast number of temples, is a station of the Free Church (Scotland) Mission, and has a flourishing English school. It is a place of considerable trade, rice, grain, silk, and cotton being the chief articles of commerce. Culna is now frequently spelt *Kálnà*. Pop. 30,000.

CULPABLE, a *kŭl'pă-bl* [F. *coupable*—from L. *culpābĭlis*—from L. *culpa*, a fault: It. *colpa;* OF. *coulpe*, a fault]: deserving of blame or censure; sinful; criminal. CUL'PABLY, ad. *-blĭ*, in a faulty manner. CUL'PABIL'ITY, n. *-bĭl'i-ti*, or CUL'PABLENESS, n. *-bl-nĕs*, the quality or condition of being blameworthy; blame. CULPA, *-pâ* [L.] fault; crime; blame; term in Roman law, whose three dis-

tinctions of degree have been adopted in the law of Scotland: *C. lata*, gross carelessness or omission, regarded as equivalent to dole; *C. levis*, degree of negligence into which a person attentive to his own affairs may be supposed occasionally to fall; and *C. levissima*, still more slight degree of negligence in some degree incident to human nature, in even the most prudent and sharp-sighted. Where a contract contemplates the mutual benefit of both parties, the middle degree of diligence is all that either is bound to exercise, and the neglect of this is *C. levis*, or culpable simply. Where one party only is benefited, he is bound to exercise the utmost diligence, the neglect of which is *C. levissima*, while the other party has done enough if he avoids *C. lata*, or gross and excessive negligence.

CUL'PABLE HOM'ICIDE see HOMICIDE: MURDER.

CULPEPER, *kŭl'pĕp-ẽr*, JOHN: b. England: surveyor. He emigrated to the southern or Clarendon colony and thence to the Carolina provinces, where he followed his profession, and became a political leader. In 1678 he headed a popular uprising in the northern or Albemarle colony which resulted in the overthrow of the pres. and deputies of the proprietors and the establishment of a new govt. He was then sent to England on a political mission, was there indicted for treason and acquitted, and on his return applied himself to his profession and laid out the city of Charleston, 1680.

CULPEPPER, or COLEPEPER, Thomas: American royal governor; b. England; d. there 1719. He was one of King Charles II's favorites, who received from that monarch a grant of the entire territory of Virginia for a period of 31 years from 1763, a grant so astounding in character, that, in the opinion of at least one historian, nothing but the very deed itself, still extant, could be accepted as evidence of the fact. He was governor of Virginia 1682–3, and two years later relinquished most of his Virginia grant, retaining only a portion called Northern Neck, and securing, instead of the remainder an annual pension of £600 for 20 years. His whole career was actuated by the meanest rapacity, an example of which may be seen in his trying to swindle the colonists by paying the public wages in light coin on which he had himself put an arbitrary value. Consult Doyle, *English Colonies in America* (1882).

CULPRIT, n. *kŭl'prĭt* [L. *culpa*, a fault; *rĕātus*, the condition of an accused person: old law L. *culpātus*, applied to person accused]: prisoner accused of a crime but not tried; one convicted of a crime is called a criminal or convict; [these discriminations are not invariably observed in common use even of good writers]: *Note.*—Skeat derives from L. *culpātus*, and says that the *r* has been inserted as a corruption.—SYN.: malefactor: felon; convict.

CULROSS, *kŭl-rŏs'*: parliamentary and municipal burgh and seaport in a detached part of Perthshire, Scotland: on the n. shore of the Firth of Forth, 6 m. w. of Dumferm-

line, 22 n.n.w. of Edinburgh. It is a place of great antiquity. A early as the 6th c., it was the seat of the monastery of St. Serf, who afterward became the patron saint of the town, where his yearly festival was kept till about the close of the 18th c. Ængus the Keldee (Culdee), an Irish martyrologist, who wrote about 800, describes Culross as lying in Strathearn, between the Ochils and the Sea of Gindan, i.e., the Firth of Forth. It stands on the face of a hill rising from the shore. The parish church preserves some remains of the conventual church of a Cistercian abbey, founded 1217, on a commanding site in the higher part of the town. Close beside it is the fine old residence of Culross Abbey, founded by the Bruces of Carnock and Kinloss in the 16th c. Culross has various charitable institutions, and does some damask weaving. Pop. 373.

CULT, n. *kŭlt*, also CULTUS, n. *kŭl'tŭs* [F. *culte*—from L. *cultus*, worship]: a particular form or system of religious observance.

CULTCH, n. *kŭlch*, also CUTCH, n. *kŭch:* the spawn of oysters; the objects on which the spawn or spat is adhering.

CULTIROSTRAL, a. *kŭl'tĭ-rŏs'trăl* [L. *culter*, a plowshare; *rostrum*, a beak]: pertaining to the CUL'TIROS'TRES, *-trēz*, an order of birds having bills shaped like the coulter of a plow, or like a knife, as the heron and the crane.

CULTIVATE, v. *kŭl'tĭ-vāt* [mid. L. *cultivātus*, cultivated —from L. *cultus*, tilled: It. *cultivare;* F. *cultiver*, to cultivate]: to till; to prepare the ground for the reception of seed; to foster; to improve, as the mind; to labor to increase; to raise, as corn. CUL'TIVATING, imp. CUL'TIVATED, pp. CUL'TIVATOR, n. *-tĕr*, one who; a sort of harrow; see GRUBBER. CUL'TIVA'TABLE, a. *-vā'ă-tbl*, also CUL'TIVABLE, a. *-vă-bl*, capable of being cultivated or tilled. CUL'TIVA'TION, n. *-vā'shŭn*, tillage of land; culture; civilization; refinement; husbandry.

CUL'TIVATED PLANTS: those plants which, either for their usefulness or their beauty, and not merely for curiosity, have been to considerable extent cultivated by man. They are of nat. orders widely different, and scattered through almost all parts of the vegetable kingdom. The prevalence of particular qualities in particular nat. orders, indeed, assigns groups of cultivated plants to some of them, as the *Cerealia* or corn-plants among grasses; but with these are botanically associated other species—usually far more numerous—to which no great value has ever been attached. It may be that, in some instances, the original preference of certain species was accidental, and that their present superiority over certain others is owing merely to the improvements effected by cultivation; but we are no more entitled to assume that this has been ordinarily the case, than that man has in his selection exhausted, or nearly exhausted, the resources of nature. Some plants are known

to have been cultivated from the most remote historic ages; some have but recently become the objects of human care, which yet are deservedly esteemed; and, in some instances —e.g., sea-kale—these have not been introduced from regions newly explored, but are natives of the very countries which were seats of ancient civilization. Probably, in the earliest ages, plants useful for food alone were cultivated, and of these only a few kinds, as is still the case among savage tribes (see FOOD); it may be doubted whether plants yielding fibre for clothing and cordage (see FIBRE), or plants from which alcoholic beverages or narcotics could be procured, were most likely next to engage attention (see FERMENTED LIQUORS: NARCOTICS). Other important classes of C. P. are those yielding tea, coffee, cocoa, and other similar beverages, containing *Caffeïne* (q.v.), or some analogous principle; those yielding Dye-stuffs (q.v.); those yielding medicines (see OFFICINAL PLANTS); those yielding fixed oils (see OILS), some of which are to be reckoned among plants valuable for food; those yielding Fodder (q.v.) for cattle; those yielding timber (see TIMBER TREES); those employed for Hedges (q.v.), etc. There are also many miscellaneous useful products of plants, and useful applications. Among such products are resins, turpentines, essential oils, gum, caoutchouc, guttapercha, bark for tanning, etc.; among useful applications, the thatching of roofs, basket-making, and the supply of food for useful insects, which leads to the cultivation of the white mulberry as the food of the silkworm, and of the cochineal cactus or nopal as the food of the cochineal insect. Many plants highly valued for their usefulness are still scarcely or not at all cultivated; this is the case particularly with many that yield medicines, for which the whole demand is not too great to be easily supplied by the plants growing wild, and with timber trees, the plantation of which is needed only in countries of very advanced civilization. The number of C. P. is continually increasing. The cultivation of flowers and ornamental shrubs and trees, unquestionably less ancient than that of some plants most necessary for urgent wants, nevertheless dates from remote antiquity, and has alway existed in every country entitled in any measure to be called civilized. Some C. P. have from a very early period been very widely diffused, e.g. particularly some of the corn-plants; others have been confined to particular regions through no necessity of climatic adaptation, but rather from lack of intercourse among nations. Thus, some of the finest ornaments of American and European greenhouses and gardens, recently introduced, have been diligently cultivated from time immemorial in China and Japan, in which countries many useful plants also are cultivated still almost unknown in other parts of the world. The cultivation of useful aquatic plants is practiced in China to a degree unapproached in any other country.

The changes produced in plants by cultivation present an interesting and difficult subject to the student of vegetable physiology. Increase of luxuriance and size is a result which might have been expected from abundant nutriment

and favorable circumstances of growth; but the determination of the strength of the plant in its vegetation to particular parts, and their greater proportionate increase, is a more remarkable phenomenon though of common occurrence, as is also the considerable modification of juices and qualities. To these effects of cultivation, perpetuated in the progeny of the plants, and increased from one generation to another, are due many of the most useful varieties of cultivated plants. Cultivated cabbages, turnips, carrots, etc., differ very much from the wild plants of the same species; for instance, there is little eatable or nutritious in the root of a wild turnip, and the acridity occasionally to be observed even under cultivation exists in it to a much greater degree. Wild celery is poisonous, or almost so. How far the effects of cultivation can be extended, is a question not yet decided in general, nor with reference to particular species.

CULTIVA'TION, in Agriculture: all operations for preparing the soil for those crops which man selects for his use. The spade, the hoe, and the plow, have been the primary implements of C. among all nations as far back as their civilization can be traced. All these effect much the same end. By their means the soil is stirred and inverted, which keeps under the vegetation that is supplanted, and loosens the soil to admit of the roots of the sown plants to run through it. The harrow or rake, on the other hand, is employed to smooth the surface and cover the seed. To allow of the C. of the crops when they are growing, in many cases the seeds are planted or sown in rows. Cereals for instance, are, with this view, often sown with a *drill* in rows from six to nine inches apart; and the narrow rows are either cultivated by the *hand* or *horse hoe*. Again, turnips, potatoes, and other green crops are sown at wider intervals, from 24 to 30 inches, and are cultivated during their growth by horse hoes of various descriptions. For the implements used in C., see their titles; for peculiarities in the cultivation of different crops, see their titles.

Generally, the soil, in the first place, should be as completely inverted as possible, since it is important to smother or bury the surface-plants, and permit them to decay within the soil and yield food for the plants to be sown. In the second place, it should be rendered as loose and comminuted as possible; for earth in this state both allows an excess of water to pass through it more easily, and retains a larger supply within it for the wants of vegetation when the weather is dry. Land that is tilled in autumn may be left open, rough, and cloddy, as the frost of winter will loosen and pulverize it. In a dry and warm climate, the desired state of the soil is secured by abundant plowing, rolling, and other operations. In a wet and moist climate, these must be more sparingly resorted to, as a moderately rough mold facilitates the draining away of excessive rains, and prevents the soil from becoming consolidated by such excess.

CULTRATE, a. *kŭl'trāt*, also CUL'TRATED, a. [L. *cultrātus*, knife-formed, provided with a coulter—from *culter*

a knife]: also CUL'TRIFORM, a. *-trĭ-fawrm* [L. *forma*, a shape]: shaped like a pruning-knife.

CULTURE, n. *kŭl'tūr*, also *-chür* [F. *culture*—from L. *cultūra*, culture, cultivation]: the act of preparing the earth for seed; cultivation; any labor or means employed for improvement; mental training; refinement by education: V. to cultivate or improve. CUL'TURING, imp. CUL'TURED, pp. *-tūrd:* ADJ. improved; refined by mental training. CUL'TURELESS, a. having no culture.

CULTURE EPOCH THEORY: this theory, which has been made especially prominent by educational authorities of Herbartian proclivities, urges that the child goes through the same stages in its development as its ancestors have done and accordingly seeks to model the materials of the curriculum upon this alleged parallelism. History, literature and religion are laid under contribution for the securing of subject matter, and the hunting age, the pastoral age, the agricultural age, etc., are employed to furnish patterns for educational occupations.

Contemporary criticism has revealed the fact that the modern child 'short circuits' so many of these older culture stages that the attempt to employ them as a basis for the curriculum is of very dubious value, at least so far as concerns the ground upon which their application is urged by the theory. In so far as the doctrine practically works out in giving children manual occupations of many interesting kinds, it converges upon the prevailing belief in the wisdom of such training for young children and so gains a support which upon its own theoretical foundations it perhaps does not deserve.

CULVERIN, n. *kŭl'vėr-ĭn* [F. *couleuvrine*—from *couleuvre*, a snake—from L. *colŭbra*, an adder, a serpent]: among earlier forms of cannon, a very long gun; generally an 18-pounder, weighing 50 cwt.; the *demi*-culverin was a 9-pounder, weighing 30 cwt.

CULVERT, n. *kŭl'vėrt* [OF. *coulouëre*, a channel, a gutter—from F. *couler;* OF. *coler*, to run, to flow—from L. *colārĕ*, to filter, to run]: a passage or arched way usually of masonry, for conveyance of water under a road or canal.

CUMÆ, *kū'mē:* ancient city on the coast of Campania, founded jointly by colonists from Chalcis in Eubœa, and from Cymæ in Asia Minor. It attained wealth and power, built several harbors or port-towns of its own, kept a moderately large fleet, planted a colony at Neapolis (Naples), and for 200 years (B.C. 700–500) was indisputably the most important and civilized city in s. Italy. Subsequently, it was repeatedly but unsuccessfully attacked by the Etruscans and Umbrians. In B.C. 474, its ally, Hieron, king of Syracuse, defeated the combined fleets of the Etruscans and Carthaginians, who had attacked it by sea. The Samnites conquered the city B.C. 420, murdered or enslaved most of the citizens, and forcibly married their wives and daughters. In B.C. 338, it was admitted to the Roman franchise. In the second Punic war, Hannibal tried to capture it, but

was repulsed by Sempronius Gracchus. Toward the close of the republic, it became the municipal cap. of the district in which the Roman nobles had their villas and sea-coast residences. It continued as a 'quiet' place to the close of the Roman empire, but re-assumed momentary importance during the wars of Belisarius and Narses. Its strong fortress, garrisoned by the Goths, was the last place in Italy that held out against the Byzantine army. Few remains of the ancient city exist.—C. is famous as the residence of the Sibyl (q.v.), whose cave—a vast subterranean grotto hewn out of the e. side of the rock on which stood the citadel—is described by Justin Martyr, who visited it. It was destroyed by Narses in a vain attempt to undermine the fortress.

CUMÆAN, a. *kū-mē'ăn*, pertaining to CUMÆ, *kū'mē* (q.v.).

CUMANA, *kô-mâ-nâ':* department of Venezuela, S. America; most easterly section of the n. coast of the republic, touching the Orinoco on the s., and meeting Caracas on the west. Besides the capital, C., it comprises the city of Barcelona, and the towns of Cariaco, Carapano, Aragua, and El Pao.

CUMANA': oldest European city in the new world, built by Diego Castellon, 1521, and originally named New Toledo. It is in the province of C., in Venezuela, S. America, at the mouth of the Manzanares, on the Gulf of Cariaco, a long and narrow arm of the Caribbean Sea; lat. 10° 30′ n., and long. 64° 15′ w. Though it was almost entirely destroyed by an earthquake, 1853, it was soon rebuilt. It has a good roadstead, commanded by a fort on an adjacent height. It has but few edifices of any note, for the houses, in order to guard against earthquake, are generally low built. It has considerable export trade in cattle, smoked meat, salt-fish, cocoa, and other provisions. Pop. (1891) with suburbs, 12,057.

CUMANIA, GREAT, and LITTLE: see KUMANIA.

CUMARIN, n. *kū'mă-rĭn* [from *cumin*, which see]: an aromatic body found in woodruff and other plants.

CUMBER, v. *kŭm'bĕr* [Dut. *komber*, loss, difficulty Ger. *kummer*, trouble, rubbish: OF. *combrer*, to hinder—from mid. L. *cumbrus*, a heap: F. *encombre*, hindrance, impediment: comp. Gael. *cumraich*, to cumber, to impede]: to heap up or place so as to cause a hindrance; to load; to crowd; to retard or stop; to trouble or perplex: N. hindrance; obstruction; perplexity; difficulty. CUM'BERING, imp. CUM'BERED, pp. *bĕrd*. CUM'BERSOME, a. *-sŭm*, or CUM'BROUS, a. *-brŭs*, troublesome; burdensome; unwieldy; not easily borne. CUM'BRANCE, n. *-brăns*, a burden; hindrance. CUM'BERSOMELY, ad. *-bĕr-sŭm-lĭ*. CUM'BERSOMENESS, n. the quality of being cumbersome. CUM'BROUSLY, ad. *-brŭs-lĭ*. CUM'BROUSNESS, n. the quality of being cumbrous. *Note.*—Skeat says CUMBER is corrupted from L. *cumŭlus*, a heap, a mass by the change of *l* into *r*, and the insertion of a *b*.

CUMBERLAND.

CUMBERLAND, *kŭm'bĕr-land:* north-westmost county of England, bounded n. by Scotland and the Solway Firth, w by the Irish Sea, s. by Lancashire, e. by Westmoreland, Durham, and Northumberland. It is 11th in size of the English counties; greatest length, 74 m.; greatest average breadth, 22; 75 m. of coast; area, 1,523 sq. m.; two-thirds being cultivated, and one-third in mountain and lake. The surface is mountainous in the s.w. and e.; the middle consists of hills, valleys, and elevated ridges; and the n. and n.w. districts, including the vale of Carlisle, are low, flat, or gently undulated. The mountains in the s.w. are high, rugged, and sterile, with deep and narrow valleys, lakes, rivers, waterfalls, and woodlands. The chief mountains are Sca Fell Pike, 3,210 ft.; Sca Fell, 3,162; Helvellyn, 3,118; Skiddaw, 3,054. From the latter are seen the German Ocean and the Irish Sea. The Pennine chain, the great backbone of the north of England, skirts the n.e. border of C., and rises in Cross Fell, 2,929 ft. C. has 15 lakes, the largest, Ulleswater, 9 miles by 1. Six of the chief waterfalls are 60 to 156 ft. high. The chief rivers are the Eden, running 35 m. n.w. into the Solway Firth; the Esk, running s. into the same; and the Derwent, which collects the water of six lakes and several tarns, and runs 33 m. n.w. and n. into the Irish Sea. The great west or Carlisle and Lancaster railway route from Edinburgh to London, crosses the n.e. of Cumberland.

The Lake district, or nearly the s.w. half of C., consists of Silurian slates, with protrusions of granite and trap rocks, and with new red sandstone along the coast s of St. Bees Head. In the n. is a semicircular strip of carboniferous limestone; then follow strips of cold strata and Permian rocks; then the new red sandstone plain of Carlisle, with carboniferous limestone on the n.e., including a clap-dike 30 m. long, parallel to and on the e. side of the Eden, and crossing to the w. near Ainstable. C. abounds in mineral wealth—silver, copper, lead, iron, plumbago, gypsum, limestone, coal, slates, marbles, marl, and several of the more rare minerals.

In the mountainous parts, the climate is cold, wet, and variable, especially from July to Oct.; on the coast, it is mild. There is a fall of 50 inches of rain annually at Whitehaven, and of 68 at Keswick; while at some places among the mountains the fall sometimes reaches 100 inches. Half of the cultivated soil consists of dry loam. Much of the subsoil is wet clay. The chief crops are wheat, barley, oats, turnips, and potatoes. There are many small dairies. Many sheep and cattle are reared in the mountains. The estates are generally small, and farmed by the owners, or held under the lords of the manors by customary tenure. Many of the small or peasant proprietors have had their lands in their families for centuries, and have a high spirit of independence. There are manufactures of woolens—much being domestic—cottons, linens, earthenware, and glass. C. is divided into five wards or hundreds, 104 parishes, and nine poor-law unions. The chief towns are Carlisle, Cockermouth, Whitehaven, Workington, Mary-

port, Wigton, Penrith, Keswick, Egremont. Under the Distribution of Seats Act (1885), C. returns six members to parliament—four for the four divisions of the county, one for Carlisle, and one for Whitehaven. C. formed part of Cumbria (q.v.). Many Roman relics have been found, such as altars, inscriptions, coins, instruments, utensils. During Saxon times, it was under Danish law. Henry III. united it to England. For three centuries before the union of England and Scotland, C. was the constant scene of war and devastation, from incursions of the English and Scotch into this debatable tract between the two kingdoms. It was again devastated in the civil wars of the 17th c., and in 1715 and 45. C. had formerly several monasteries and hospitals; and on the borders, many towers or peel houses; and it has still some old Norman and Gothic churches.—Pop. (1871) 220,253; (1881) 250,630; (1901) 266,924.

CUM'BERLAND: city, cap. of Alleghany co., Md., on the Potomac river and the Baltimore and Ohio railroad, and at the head of navigation of the Chesapeake and Ohio canal; 150 m. s. of Pittsburg, Penn., and 178 m. w. by n. of Baltimore; second city in the state in commerce and population. It is a terminus of the C. and Penn. railroad, extending into W. Va., and of the Pittsburg Washington and Baltimore railroad; is on the e. edge of the noted C. coal region which stretches w. to the Ohio river; and has numerous mines of semi-bituminous coal and valuable iron ores in its immediate vicinity which provide the chief traffic of the canal. The business interests of C. embrace rolling mills for bars and rails, factories for other kinds of railroad iron and the manufacture of steel, foundries, machine shops, and manufactories of cement, flour, leather, and brick. The city is supplied with water on the Holly plan, and contains 15 churches, 4 banks, a Rom. Cath. academy and convent, a Capuchin house, and 3 weekly newspapers. Pop. (1900) 17,128; (1910) 21,839.

CUM'BERLAND, Richard: 1732, Feb. 19–1811; b. in the lodge of Trinity College, Cambridge: dramatic writer and essayist. He was the great-grandson of the bp. of Peterborough, and grandson, by the mother's side, of Dr. Richard Bentley. He was placed at the public schools of Bury St. Edmunds and Westminster, and at the age of 14 was entered at Trinity College, Cambridge, where he took his degree in his 18th year, and two years later was elected fellow. Having been appointed private sec. to the Earl of Halifax, he gave up his intention of entering the priesthood, and passing through several subordinate offices, was appointed sec. to the board of trade, holding that office till 1782, when the board was suppressed. Having obtained a compensation allowance, C. retired to Tunbridge Wells. Here he applied himself to literature, and wrote farces, tragedies, comedies, pamphlets, essays, and novels. Many of his comedies were successful at the time of their appearance, though they have not kept possession of the stage. C. is best known as essayist, and translator from the Greek poets. His memoirs were published 1806.

CUMBERLAND, Richard, d.d.: 1632, July 13—1718 Oct. 9; b. London. Educated at St. Paul's School and at Cambridge, he was appointed to the rectory of Brampton, Northamptonshire, 1658; in 1667, to the living of All Hallows, Stamford; in 1691, to the bishopric of Peterborough. Cumberland was a man of great acquirements and piety. He was the author of several works, but he is now remembered chiefly on account of his *Inquiry into the Laws of Nature*, issued in reply to Hobbes; and his *Essay on Jewish Weights and Measures*. His reply to Hobbes is well reasoned and instructive, but seems to miss the proper line of attack. Much stronger replies have since been developed. As an instance of his insatiable thirst for knowledge, it is mentioned that he learned Coptic after the age of 83.

CUM'BERLAND, William Augustus, Duke of. 1721–65; second son of George II. He adopted a military career, was wounded at Dettingen, 1743, and defeated at Fontenoy by Marshal Saxe, 1745. In 1746, he defeated the Young Pretender at Culloden. In 1747, he was again defeated by Saxe (at Lafeldt), and in 1757 had to surrender and disarm his army at Klöster-Zeven. On his return to England, he felt compelled to resign his commissions. See *Life* (1776) and *General Orders of* 1745–47 (1876). The latter seems to show that his severity after Culloden has been exaggerated.

CUM'BERLAND GAP: pass through the Cumberland Mountains, at the s.e. corner of Ky., between Ky. and Tenn.: important as a strategic position, during the war of secession.

CUM'BERLAND ISLAND: large island with Davis Strait on the e., Hudson's Bay on the w., Hudson's Strait on the s., and on the w. a small strait separating it from Cockburn Island.

CUMBERLAND MOUNTAINS: branch of the Appalachian chain, forming a portion of the boundary between Va. and Ky., extends in a s.w. direction through Tenn. dividing the state into E. Tenn. and Middle Tenn., and terminates in n.e. Ala. and n.w. Ga.; general elevation 2,000 ft., greatest width 50 m.; area 5,100 sq. m. The greater part of the range is in Tenn., where it is distinguished by a broad, level table-land from which several ridges rise to an additional height of 800 ft. The climate of this plateau is equable, and its soil is very rich. The most important of the mineral resources of Tenn. and Ky. are the coal and iron deposits in the Cumberland Mountains. These are very numerous, very large, and very productive. The coal is bituminous in Tenn. and Ky., and some cannel resembling the English species is found in the latter state. Chestnut, white ash, oak, pine, hickory, and maple grow in abundance in all parts of the plateau.

CUMBERLAND PRESBYTERIANS: important denomination of Christians, the founders of which had been in regular connection with the General Assembly of the

Presb. Church in the United States. In the first years of this century a religious movement began in Logan co. Ky. (under the preaching of the Rev. James McGready), which spread rapidly through the state, and into the surrounding states. Besides increased attention to the usual seasons and ordinary mode of worship, camp meetings, held during the summer, were attended by thousands of persons who engaged for several successive days and nights in almost continuous religious exercises. The excitement became very great, and strange irregularities occurred. Yet many lasting and wide results of good were reached, which continue to attest the genuineness and power of the revival. It checked infidelity and established Christian faith among the toiling and uncultured settlers of the great west. As the harvest increased the laborers were found to be few. In the continuous meetings the great demand for preaching, exhortation, and prayer thrust forward young, inexperienced, and uneducated persons, many of whom, displaying natural ability combined with spiritual fervor, attained success and devoted themselves permanently to the work of preaching. As the number of congregations increased it was impossible to supply them with regularly trained and ordained ministers. Consequently, some of the class just mentioned assumed the office of public exhorters and teachers. Some also of the older and more experienced ministers, impelled by the evident necessity of the case, selected young men of talent and piety, and encouraged them to pursue a short course of preparation for the ministry. When these applied to the presbytery of Transylvania to be licensed, some of its members found fault not only with their imperfect training, but also with what were called their unorthodox theological views. They were, however, licensed; a majority of the presbytery thinking it necessary, and hoping that they would increase in sound knowledge. This door, having been opened, could not be closed. Candidate after candidate, of this character, was licensed and subsequently ordained. The presbytery of Transylvania was divided; the new body, named the presbytery of Cumberland, consisting chiefly of those who favored the new plans. Candidates were now freely licensed and ordained on their declaration that they adopted the Confession of Faith only so far as they considered it to be in harmony with the Word of God. Yet, so far as can be judged from subsequent events, their exceptions were limited to a single phase of doctrine.

These proceedings having been disapproved by the synod of Kentucky, and by the general assembly, the synod dissolved the presbytery of Cumberland and reattached its approved numbers to the presbytery of Transylvania. The Cumberland Presbytery regarded the proceedings against them as unconstitutional; but, influenced by a desire for peace, and by the hope that a reconciliation might be effected, refraining from all strictly presbyterial acts, formed themselves into a council in order to

retain their congregations and carry on their work. After continuing this course for five years without attaining the hoped-for result, they, in 1810, reorganized the presbytery of Cumberland as an independent body. In their own locality they were naturally called Cumberland Presbyterians; and in all their subsequent progress they have retained the name.

The new presbytery published a declaration of their theological opinions. These they called Calvinistic, except that they modified the statement of the doctrine of predestination so as to free it from the 'idea of fatality' which they thought the Westminster Confession involved. They professed to hold: '1. That there are no *eternal* reprobates. 2. That Christ died, not for a part only, but for all mankind; and for all in the same sense. 3. That infants, dying in infancy, are saved through Christ and the sanctification of the Spirit. 4. That the Spirit of God operates on the world, as extensively as Christ has made atonement, in such a manner as to leave all men inexcusable.' With this avowed exception covering these points, they professed to agree with the Westminster Confession.

The general synod, constituted 1813, published an edition of the Confession and Shorter Catechism revised so as to conform to the views of the denomination as given above. In 1828, to keep pace with the growth of the churches, the synod was expanded into the general assembly, which meets annually on the third Thursday of May. At the meeting of the Pan-Presbyterian Council, in Belfast, 1884, June, the Cumberland churches having applied for admission to membership, and their delegates being present, the committee on admission reported, unanimously 'recommending the council (without pronouncing any judgment on the church's revision of the Westminster Confession and Shorter Catechism) to admit the Cumberland Presbyterian Church into the alliance, and to invite the delegates now present to take their seats.' This report gave rise to a long and earnest debate, and having, by a vote of 112 to 74 been amended so that the clause '*without pronouncing any judgment on*,' etc., reads, '*without approving*,' etc., was adopted; only 12 delegates voting for exclusion. The roll of the Cumberland delegates was then called, and having answered to their names, they were welcomed by the moderator into the council.

The first college of the denomination, founded 1827 at Princeton, Ky., was removed 1842 to Lebanon, Tenn., and named Cumberland University. It has literary, law, and theological departments, with (1896) instructors 20, and students 313. The law school is especially eminent. The Ladies' Female Coll., an annex of the univ. had students 122, N. Green, LL.D., chan. The other colleges of the church are as follows, with statistics of 1896: Waynesburg Coll., Waynesburg, Penn., instructors 10, students 285; Lincoln Univ., Lincoln,

Ill., instructors 9, students 150; Mo. Valley Coll., Marshall, Mo., instructors 13, students 276; Trinity Univ., Tehuacana, Tex., instructors 15, students 267; Ark. Cum. Coll., Clarksville, Ark., instructors 9, students 142; Bethel Coll., McKenzie, Tenn., instructors 5, students 160; and Ozark Coll., Greenfield, Mo., instructors 5, students 78. There are also 10 high schools and academies under the control of the department, with a total of instructors 62, students 1,202. There are 211 students in the various colleges preparing for the ministry.

The publishing house is located at Nashville, Tenn., where is issued the leading church paper, *The Cumberland Presbyterian*, and other periodicals. The church conducts 23 home missions, and foreign missions in Mexico and Japan. The denomination now extending from Pennsylvania to the Pacific, and from the lakes to Texas, comprises (according to the Minutes of the 66th General Assembly, 1896, May) synods 15, presbyteries 126, ordained ministers 1,617, licentiates 274, congregations 2,867, communicants, including estimates of 420 churches not reporting, 193,987 (an increase of 17 per cent. since 1890); Sunday-school teachers and scholars 102,445; Christian Endeavor societies 1,031: members 29,792. During the year the amount reported contributed for all purposes was $785,934, averaging $4.74 per member.

The principal strength of the church is found in the following states: Tenn. has 24 per cent of the entire membership, two-thirds of which is confined to the western half of the state; Mo., 15 per cent.; Tex., 13 per cent.; Ky., 9½ per cent.; Ill., 8½ per cent., and Penn., 4 per cent., wholly in western part of the state. Church property is valued at over $3,500,000. There is also a separate assembly for the colored portion of the denomination, comprising, so far as reported, 5 synods, 22 presbyteries, 200 ordained ministers, 180 licentiate preachers, 200 candidates, and 15,000 church members confined almost entirely to Tenn., Ala., Tex., and Kentucky.

Reports for 1902 showed 1,595 ministers, 2,944 churches, and 184,493 communicants. The colored branch had 450 ministers, 400 churches and 39,000 communicants.

CUM'BERLAND RIVER: rising in Ky., after a course of 600 m., of which the lower half is navigable for vessels of 400 tons, enters the Ohio at Smithland from the left, a few m. above the point where the Tennessee also joins the Ohio from the same side.

CUMBERLAND ROAD, The, or Great National Pike, originally, a road planned from the Maryland frontier at Cumberland, Md., to connect with the state roads and run to St. Louis. It was built by the U. S. as far as Vandalia, Ill., but the name 'Cumberland Road' was extended to take in the section from Cumberland through Frederick to Baltimore, built largely by the Maryland banks. The portion built by the national

government was acquired in 1878 by the counties of Alleghany and Garrett, which made it a free road.

CUMBRAYS, *kŭm-brāz′*, or GREAT AND LITTLE CUMBRAY, *kŭm-brā′:* two small isles in the Firth of Clyde, between Bute Isle and Ayrshire, and included in the county of Bute. They consist of old red sandstone, with trapdikes intersecting it. GREAT CUMBRAY, three m. e. of Bute, is 3½ m. long by two broad, contains Millport and Newton villages, and is a great summer resort of the inhabitants of Glasgow. Pop. (1881) 1,856.

LITTLE CUMBRAY lies nearly a mile s. of Great Cumbray, is one mile long by half a mile broad, and rises 780 ft.; it contains many caves, excavated by the sea in the stratified rocks. Pop. (1881) 23.

CUMBRE, LA, *lâ-kôm′brā* [Spanish for top or height]: one of the principal passes across the Andes, on the high-road between Santiago in Chili and Mendoza in the Argentine Republic. The altitude of its crest is 12,454 ft., fully one half higher than the pass of the Great St. Bernard in the Alps.

CUMBRIA, *kum′brĭ-a:* ancient British principality, comprising Cumberland in England and that part of Scotland now divided into the shires of Dumbarton, Renfrew, Ayr, Lanark, Peebles, Selkirk, Roxburgh, and Dumfries. It was governed by its own kings—who had their seat at Dumbarton, Glasgow, and elsewhere—until about the middle of the 10th c., when it became a tributary principality held of the king of the English, by the heir of the king of the Scots: see BRETTS AND SCOTS.

CUMBRIAN, a. *kŭm′brĭ-ăn* [the anc. *Cumbria*]: in *geol.*, the term for the lowest slaty and partially fossiliferous beds of Westmoreland and Cumberland.

CUMBRIAN MOUNTAINS, *kŭm′brĭ-an:* great knot of highlands, nearly 50 m. in length and breadth, in the n. w. of England, occupying part of Cumberland, Westmoreland, and Lancashire. This tract, the English Lake district, has much of the physical character of Wales, and being unsurpassed in the British Isles for picturesqueness and beauty, it is much frequented by tourists. The central and s. parts consist of Silurian, granite, and trap rocks, rising in lofty rugged mountains, which inclose deep valleys and large lakes. There are 25 mountain-tops upward of 1,500 ft. high, including Sca Fell Pike, 3,210 ft.; Sca Fell, 3,162; Helvellyn, 3,118; and Skiddaw, 3,054. Four passes cross these mountains at the height of from 1,100 to 1,250 ft. The deep valleys between the mountains contain 14 lakes, 1 to 10 miles long. The largest of the lakes are Windermere, Ulleswater, Conistone Water, Bassenthwaite Water, and Derwentwater. A semicircular strip of carboniferous limestone skirts the north of the Silurian tract. On the higher Cumbrian Mountains, snow lies six or eight months in a year, but on the neighboring coasts

rarely above a few days. Many eminent persons have resided among the lakes, the beauty of which has inspired some of the finest writings of Wordsworth, Coleridge, Southey, Prof. Wilson, De Quincey, Arnold, and Harriet Martineau.

CUMIANA, *kô-mē-â′nâ:* town of n. Italy, province of Turin, 7 m. n. of Piñerolo, near the right bank of the Cisola. Pop. 5,700.

CUMMIN, or CUMIN, n. *kŭm′ĭn* [L. *cumīnum;* Gr. *kumīnon*], (*Cuminum*): genus of plants of the nat. order *Umbelliferæ*, containing only one known species (*C. cymīnum*), native of Egypt and the neighboring countries; an annual, with branched stem, much divided thread-like leaves, general and partial involucres resembling the leaves, umbels of small white or pink flowers, and fruit about two lines long. The fruit (seeds) has an odor resembling that of caraway, but stronger and less pleasant. It is used as a carminative in many parts of the world; in Germany, it is often put into bread; in Holland, sometimes into cheese. It is used also in medicine, particularly with resin for discutient plasters, but its use is now almost confined to veterinary practice. It contains a peculiar volatile oil (*Oil of Cummin*). Cummin is cultivated in the south and middle of Europe, India, etc.; its seed is exported from Sicily and Malta.—The fruit of *Lagoecia cuminoides*, another umbelliferous plant, a native of the Levant, is similar in its qualities and uses to that of cummin. The BLACK CUMMIN of the ancients is believed to be a species of *Nigella* (q.v.). Both perhaps are included in the name cummin in Scripture. CUMINIC ACID, *kŭ-mĭn′ĭk*, crystalline substance obtained from cummin. CUMOL, n. *kŭ′mŏl*, and CUMINOL, n. *kŭ′mĭn-ōl* [L. *olĕum*, oil]: two oils into which oil of cummin may be separated.

CUMMING, *kŭm′ĭng*, ALFRED, American territorial governor: b. 1802; d. 1873. When the Mormons under Brigham Young disputed the authority of the Federal government, President Buchanan, in 1857, sent Cumming to Utah as governor, with a force of 2,500 men. He at once declared the territory to be in a state of revolt, to which Young replied by a proclamation forbidding the army to enter the territory. It was not until 1858 that Cumming regularly assumed office, in which he was supported by the troops for nearly two years. Cumming held the position until 1861.

CUMMING, JOHN, D.D.: 1810, Nov. 10—1881, June 5; b. Aberdeenshire; Scotch Presb. preacher and author. He was graduated at King's College, Aberdeen, 1827, and, 1833, was ordained in the Scotch Church, Crown Court, Covent Garden, London, where he officiated till 1879. He was widely known as the 'champion' of the anti-popery class of Protestants, and defender of the state church; but the chief source of his notoriety was his peculiarly literal and vivid apocalyptic interpretation, delineating as near at hand the second coming of Christ. Cumming's works

are very voluminous· the chief are *Voices of the Night, Voices of the Day, Voices of the Dead, Apocalyptic Sketches, Expository Readings in the Old and New Testaments.*

CUMMINGS, Amos Jay: 1841, May 15—1902, May 2, journalist: b. at Conkling, N. Y. A the age of 12 he was working in his father's printing-office at Irvington. In early manhood he worked as a printer in several states and in Canada; and travelled in Mexico, Central America, and Europe. In 1860 he left his work as compositor on the New York *Tribune*, enlisted in a regt. of vols. and was in the battles of Fredericksburg and Chancellorsville. Later, he was successively night editor, city editor, and political editor of the *Tribune;* and then became one of the editors of the New York *Sun*. He was pres. of the New York Press Club 1885–6; and was a democratic representative in congress from 1887 till his death.

CUMMINGS, Charles Amos, American architect: b. Boston, 1833, June 26. He was educated in the Boston schools and at the Rensselaer Polytechnic Institute, Troy, N. Y., and till his retirement, some years since, practiced his profession in his native city. He published a valuable *History of Architecture in Italy from the Time of Constantine to the Dawn of the Renaissance* (1901), and collaborated with W. P. P. Longfellow (q.v.) in *A Cyclopædia of Works of Architecture in Greece, Italy, and the Levant* (1897).

CUMMINGS, Edward, American Unitarian clergyman: b. Colebrook, N. H., 1861, April 20. He was graduated at Harvard 1883, and from its Divinity School 1885, and was the first incumbent of the Robert Treat Paine fellowship in Social Science 1888–91; studying in England, France, Italy and Germany. He was instructor in sociology at Harvard 1891–3, and associate professor 1893–1900 when he became associate pastor of the South Congregational Church, Boston, Mass.

CUMMINGS, Joseph, dd., ll.d.: 1817, Mar. 3—1890, May 7; educator: b. at Falmouth, Me. He graduated at Wesleyan Univ. 1840; became principal of Amenia (N. Y.) Seminary 1843; preached 1846-53; was prof. of theol. in the bibical institute, Concord, N. H., 1853–4; pres. of Genesee Coll., Lima, N. Y., 1854–57; pres. of Wesleyan Univ. 1857–75, and prof. of mental philos. and polit. economy in the same institution 1875–77; pres. of Northwestern Univ., Evanston, Ill., 1881-90. Many of his sermons and addresses have been published, and he edited Butler's *Analogy.*

CUMMINGS, Thomas Seir, American artist: b. England 1804; d. Hackensack, N. J., 1894, Sept. 24. He studied chiefly under Henry Inman, and worked mostly at miniature painting. He was a founder of the National Academy of the Arts of Design 1826, Jan. 16, an organization of 15 members who each chose another.

CUMMINS, Albert Baird, American lawyer and governor: b. Carmichaels, Pa., 1850, Feb. 15. He received an academic education at Waynesburg, Pa., was admitted

to the bar, and settled in practice at Des Moines, Ia. From 1896 to 1900 he was a member of the Republican National Committee, in 1901 was elected governor of Iowa, and in 1903 was nominated for the term of 1904–6.

CUMMINS, *kŭm'ĭnz*, GEORGE DAVID, D.D.: 1822, Dec. 11—1876, June 26; b. near Smyrna, Del.: founder of the Ref. Episc. Church. He graduated at Dickinson College 1841, was a licentiate of the Meth. Episc. Church two years, was ordained deacon in the Prot. Episc. Church 1845, Oct., and presbyter 1847; was rector of churches in Norfolk, Richmond, Washington, Baltimore, and Chicago; was elected asst. bp. of Ky. 1866; resigned his office and withdrew from the church; and founded the Ref. Episc. Church in New York, and was elected its first presiding bp. 1873, Dec. 2.

CUMMINS, MARIA SUSANNA: author; 1827, Apr. 9—1866, Oct. 1; b. Salem, Mass.; dau. of Judge David C. She was educated at Mrs. Sedgewick's school at Lenox. Her first book, *The Lamplighter* (Boston 1854), had immense popularity on both sides of the Atlantic. Other works were *Mabel Vaughan* (1857); *El Fureidis* (1860); *Haunted Hearts* (1864); and many magazine articles.

CUM-SHAW, *kŭm'shaw* [Chin. *kom-tsie*, a present]: a present or bonus; originally that paid on vessels entering the port of Canton.

CUMULATIVE, a. *kŭ'mŭ-lā'tĭv* [L. *cumŭlātus*, heaped up—from *cumŭlus*, a heap: It. *cumulare;* F. *cumuler*, to heap up]: composed of parts in a heap that is added to something else; in *logic*, applied to a series of arguments which, taken in the whole, carries strong conviction, as *cumulative evidence;* in *med.*, a drug which remains long in the system without acting. CUMULATIVE VOTING, the practice of a voter possessed of several votes giving them all to one candidate instead of distributing them among two or more.

CUMULUS, n. *kŭ'mū-lŭs* [L. *cumŭlus*, a heap: It. *cumulo*]: convex or conical heaps of clouds, increasing upward from a horizontal base, usually a very dense structure; the cloud of day. CU'MULO-STRA'TUS, a cloud formed by the cirro-stratus blending with the cumulus. CU'MULO-CIR'RO-STRA'TUS, the nimbus or rain-cloud, consisting of a cloud or system of clouds from which rain falls: see CIRRO.

CUMYN, *kŭm'in*, or CUMMING, *kŭm'ing*, or COMYN, *kŭm'in:* family which rose to great power and eminence in England and Scotland; named from the town of Comines, near Lille, on the frontier between France and Belgium. While one branch remained there, and in 1445, gave birth, in its old chateau, to the historian Philippe de Comines (q.v.), another followed the banners of William of Normandy to the conquest of England. In 1069, the Conqueror sent Robert of Comines, or Comyn, with 700 horse to reduce the yet unsubdued provinces of the north. He seized Durham, but had not held it for 48 hours, when the

people suddenly rose against him, and he perished in the flames of the bishop's palace. His nephew, William, became chancellor of Scotland about 1133. The chancellor's nephew, Richard, inherited the English possessions of his family, and acquired lands in Scotland. By his marriage with Hexilda, Countess of Athol, the granddaughter of Donald Bane, King of the Scots, he had a son William, who, about 1210, became Earl of Buchan by marrying the Celtic heiress of that great northern earldom. By this marriage, he was father of Alexander, Earl of Buchan, who, by marrying a daughter of Roger de Quenci, Earl of Winchester, acquired the high office of Constable of Scotland, with great estates in Galloway, Fife, and the Lothians. By a previous marriage with a wife whose name has not been ascertained, William Cumyn was father of Richard—whose son John became Lord of Badenoch—and of Walter, who by marriage became Earl of Monteith. By other marriages, the family obtained, for a time, the earldom of Angus and the earldom of Athol, so that by the middle of the 13th c., there were in Scotland 4 earls, 1 lord, and 32 belted knights of the name of Cumyn. Within 70 years, this great house was so utterly overthrown, that in the words of a contemporary chronicle, 'there was no memorial left of it in the land, save the orisons of the monks of Deer' (a monastery founded by William Cumyn, Earl of Buchan, 1219). The Cumyns perished in the memorable revolution which placed Bruce on the throne of Scotland. Their chief, the Lord of Badenoch, had, 1291, been an unsuccessful competitor for the crown, as a descendant, through king Donald Bane, of the old Celtic dynasty. His son, Red John Cumyn, was one of the three wardens of Scotland, and distinguished himself by his gallant resistance to the English. He fell under Bruce's dagger, before the altar of the Franciscan friars at Dumfries, 1306; and his kindred went down, one after another, in the struggle to avenge him. John Cumyn, Earl of Buchan, was defeated by Bruce in a pitched battle, near Inverury, 1308, when his earldom was wasted with relentless severity, so that for 60 years afterward, men mourned the desolation of Buchan. Such of the Cumyns as escaped the sword, found refuge, with their wives and children, in England, where, though they were so poor as to be dependents on the bounty of the English court, they married into the best families, so that, in the words of Mr. Riddel, 'their blood at this day circulates through all that is noble in the sister kingdom.'

CUNARD, *kŭ-nârd'*, Sir Samuel: founder of the well-known line of Transatlantic steamers: 1787–1865, Apr. 28; b. Halifax, Nova Scotia, where his father, a French Canadian, had settled. Becoming early a successful merchant and shipowner, Cunard cherished the idea of steam communication between England and America; and having obtained a contract from the English government for the mail service, built four paddle-steamers for the Atlantic voyage. The first passage was that of the *Britannia*.

1840. From its small but successful beginning, Cunard's undertaking soon developed into one of the vastest of private commercial concerns, and he was made a baronet, 1859. He died at London.

CUNAXA, *kŭ-năks'â:* place in Babylonia, e. of the Euphrates, about 60 m. n. of Babylon, noted for the battle (B.C. 401) between Cyrus the younger and his brother Artaxerxes Mnemon, in which the former was killed.

CUNCTATOR, n. *kungk-tā'tẽr* [L]: a delayer; one who is cautiously slow: title applied especially to *Quintus Fabius Maximus*, who, when elected dictator of Rome after the fatal battle at Lake Thrasymene, B.C. 217, by a succession of skilful movements, marches, and counter-marches, without even coming to an engagement, greatly harassed the army of Hannibal.

CUNDINAMARCA, *kôn-dē nâ-mâr'kâ:* central state of Colombia (formerly New Granada); area 79,000 sq. m. The w. part is mountainous, with luxuriant valleys; in the e. are vast plains. Cundinamarca is well wooded, and rich in minerals. The cap. of Cundinamarca is Bogota, also cap. of the republic. Cundinamarca was one of the most highly civilized regions of the continent before the Spanish conquest; and ancient ruins are numerous. Pop. (1881) 569,000.

CUNEAL, a. *kŭ'nĭ-ăl* [L. *cŭnĕŭs*, a wedge: It. *cuneo*]: having the form of a wedge. CU'NEATE, a. *-nĭ-ăt*, or CU'NEATED, a. wedge-shaped; tapering like a wedge. CUNE'IFORM, a. *-nē'ĭ-fawrm* [L. *forma*, shape]: having the shape or form of a wedge.

CUNE'IFORM, or *Cuneatic*, or *Wedge-shaped*, or *Arrow-headed* [Fr. *Tête-à-clou*, Ger. *Keilförmig;* from Lat. *cuneus*, 'wedge']: form of writing, found in old Babylonian and Persian inscriptions, of which the component parts resemble either a wedge, the barb of an arrow, or a nail. It was used for monumental records, and was either hewn or carved in rocks or sculptures, or impressed on tiles or bricks. It appears to have been employed first in Assyria and Media, and to have then spread over the whole of that vast portion of Asia which formed the Persian monarchy under the Achæmenidæ. For nearly 2,000 years after its extinction its very existence was forgotten. Although the immense ruins found all over that ancient kingdom, and principally those of splendid palaces and tombs, which, at a distance of about 12 m. from Shiraz, designate the site of ancient Persepolis, had at all times attracted attention of Eastern travelers, still no one seems to have dreamed that those strange wedges which completely covered some of them could have any meaning. When first discovered in their classical form, they appeared at a hasty glance like a maze of short lines running in every possible direction. On closer examination there was found a system in this apparent disorder. The characters are arranged in columns usually running horizontally, which are read from left to right, the great majority of

the wedges either standing upright or pointing to the right. These wedges, arranged singly or in groups, stand either for complete ideas (called 'ideograms') or for syllables.

It was Garcia de Sylva Figuëroa, ambassador of Philip III. of Spain who, on a visit to Persepolis, 1618, first became possessed with the firm conviction that these signs must be inscriptions in some lost writing and, perhaps, language, and had a line of them copied. Among subsequent travellers whose attention was attracted to the subject, Chardin, after his return to Europe, 1674, published three complete groups of cuneiforms, copied by himself at Persepolis, together with a comparatively long and minute account of the mysterious character. He likewise declared it to be 'writing and no hieroglyphs: the rest, however, will always be unknown.' Michaux, a French botanist, sent, 1782, an entire altar, found at Bagdad, to Paris, covered with inscriptions, and bearing a large wedge—evidently an object of worship—on its top. Ever since, the materials for the investigation of a subject, the high importance of which by that time was fully recognized, have been rapidly accumulating. Sir H. Jones, Ker Porter, Robert Stewart, Sir W. Ouseley, Bellino, Dr. Schultz—up to Rich and Botta Flandin, Rouet, Layard, Oppert, and, above all, Rawlinson, each in his turn brought back more or less valuable materials from eastern travels; and these explorers were among the foremost students of the records which they had brought to light.

Though certain portions of these characters and the language that they represent are still shrouded in comparative mystery, it is highly interesting and instructive to notice the opinions first entertained of them by the learned in Europe. In the Transactions of the Royal Soc., 1693, June, they first appeared from a copy made by Flowers, and they are held to be 'the ancient writing of the Gaures or Gebres, or a kind of *telesmes*'—an expression no less unintelligible than the subject it tries to explain. Thomas Hyde, eminent Orientalist, declared them, in his learned work on the religion of the ancient Persians (1700), nothing more or less than idle fancies of the architect who endeavored to show how many different characters a certain peculiar stroke in different combinations could furnish, and reproved the authors of all those 'so-called Persepolitan inscriptions' very strongly for having misled so many wise men, and taken up so much of his own precious time. Witte, in Rostock, saw in them the destructive work of generations upon generations of *worms*. Generally, they were pronounced to be talismanic signs, mysterious formulæ of priests, astrological symbols, charms, which, if properly read and used, would open immense vaults full of gold and pearls—an opinion widely diffused among the native *savans*. The next step was to see in them a species of revealed digital language, such as the Almighty had first used to Adam. Lichtenstein read in some of them certain passages from the Koran, written

in Cufic, the ancient Arabic character; in others, a record of Tamerlane; and was only surprised that others should not have found this, the easiest and clearest reading, long before him. Kæmpfer was not sure whether they were Chinese or Hebrew characters, That they were Runes, Oghams, Samaritan, Greek characters, were some of the soberest explanations.

It was Karsten Nieublir who first showed the way out of this labyrinth of absurdities. Without attempting to read the character itself, he first of all established three distinct cuneiform alphabets instead of one, the letters of which seemed to outnumber those of all other languages together. The threefold inscriptions found at Persepolis he thus took to be transcripts of the same text in three alphabets, in a hitherto unknown language. Tychsen of Rostock (1798), and Münter of Copenhagen (1800), affirmed and further developed this conjecture. The latter went so far as to divide the characters and inscriptions into alphabetical, syllabic, and monogrammatical, and to assume two different languages—Zend for inscriptions of a religious, Pehlvi for those of a political character. The real and final discovery, however, is due to Grotefend of Hanover, and dates from 1802. On Sept. 7 of that year, he laid the first cuneiform alphabet, with its equivalents, before the Acad. of Göttingen —by a remarkable coincidence, in the very same sitting in which Heyne gave an account of the first reading of hieroglyphs. The process by which Grotefend arrived at that wonderful result is exceedingly interesting. He fixed upon a Persepolitan inscription of what was called the first class, and counted in it 30 promiscuously recurring groups or combinations of cuneiforms. These groups he concluded to be letters, and not words, as a syllabarium of 30 words could not be thought of in any language. Then, again, a certain oblique wedge, evidently a sign of division, which stood after three, four, five, up to eight or nine such groups or letters, must show the beginning or end, not of a phrase, but of a word. Tychsen and Münter had already pointed out a certain combination of seven characters as signifying the royal title. Grotefend adopted this opinion. The word occurred here and there in the text, and after the first words of most of the inscriptions, twice; the second time with an appendage, which he concluded to be the termination of the genitive plural, and he translated these two words, without regard to their phonetic value, 'King of Kings.' He then, in comparing the words preceding the royal titles in two tablets, found them repeated in what he assumed to be a filial relation; thus: There were three distinct groups, words, or names, which we will call X, D, and H, and this is how they occurred: 1, X, King of Kings, son of D, King of Kings; 2, D, King of Kings, son of H; but the 3, H, was *not* followed by the word king. H, therefore, must have been the founder of the dynasty. Now the names themselves had to be

found. Grotefend, unlike his predecessors, had no recourse to philology, but to archeology and history. The inscriptions in question were by that time proved to belong to the Achæmenian dynasty, founded by Hystaspes=group H. He was followed by Darius, 'King of Kings, son of Hystaspes,' or Darius Hystaspes= group D; he, again, by Xerxes, King of Kings, son of Darius, King of Kings= group X—and the problem was solved. It could not have been Cyrus and Cambyses, as the groups did not begin with the same signs (C); nor Cyrus and Artaxerxes, the first being too short for the group, the second too long—it could only be Darius, Xerxes, Hystaspes—of course, in the orthography of their, not of our time; and wherever in these names the same letters recurred, they were expressed by the same combinations of signs. A further proof of the correctness of the reading was furnished by a vase in Venice, bearing a cuneiform and a hieroglyphical inscription, which were both read at the same time independently: 'Xerxes.' Innumerable difficulties, however, remained, and remain to this moment. Grotefend had, after all, read only—and not altogether correctly—three names, which did not contain more than 12 letters—the rest being mere conjecture—and there were many more in this alphabet. The two other alphabets, with an infinite variety of letters, had hardly been properly approached yet. Moreover, the discovery of Grotefend was in itself so startling, so extraordinary and bold, that no one ventured to follow it up for the next 20 years, when H. Martin found the grammatical flexions of the plural and genitive case. Not specifying his further discoveries, or those of Rask, Burnouf, Lassen, Westergaard, Beer, Jacquet, and others who followed, it may be said that they mostly secured for themselves fame by rectifying or fixing one or two letters. The last and greatest of investigators of this first alphabet is Rawlinson, who not only first copied, but also read, the gigantic Behistun inscription—containing more than 1,000 lines—of which more anon.

After more than 15 years of study in the East, he published in 1851 his "Memoir on the Babylonian and Assyrian Inscriptions," containing the text, transliteration, and translation of this inscription, which records the triumph of Darius I. of Persia over his enemies.

Proceeding now with the results of the investigations of the cuneiform character in general, till the present time, notice should be taken, that though much has been done, more remains to be done, and that a few years may change the whole aspect of cuneiform studies.

Cuneiform writing was used for monumental records only, a cursive writing—from right to left—being used for records of minor importance. The inscriptions are found mostly in three parallel columns or tablets, and are then translations of each other in different alphabets and languages, called respectively Persian, Median, and Assyrian; the Achæmenian kings being obliged to make their

decrees intelligible to the three principal nations under their sway, as in our days the Shah of Persia would use the Persian, Turkish, and Arabic languages, in order that he might be understood in Bagdad and Teheran.

The first of the three, the Persian—first, so far as it always holds the place of honor—consists of 39 to 44 letters, and is the most recent of the three, the most ancient being the Assyrian. It is distinguished by the oblique stroke which divides its words. Its letters are composed of not more than five strokes or wedges placed side by side horizontally or perpendicularly, or both, never—with one exception—crossing each other. The language is pronounced by all investigators (save Gobineau) to be as near Sanskrit as possible, though not so refined, and to be the mother-language of modern Persian. It is only twice found by itself; all the other inscriptions are trilingual, The time of its use is confined to the years B.C. 570-370. The oldest instance of its employment is an inscription of Cyrus the Great at Pasargadæ; the most recent, that of Artaxerxes Ochus at Persepolis. The most important is that of Darius Hystaspis, in the great inscription of Behistun, which contains, besides genealogical records, a description of the extent of his power, the leading incidents of his reign, prayers to Ormuzd and the angels, and reference to the building of the palaces—the last two subjects generally forming the only contents of the other Persian inscriptions. The inscription of Artaxerxes Ochus is important, so far as it traces his origin to the Achæmenidæ, through Arsames, grandfather of Darius. Most of these inscriptions occur at Persepolis, Behistun, Naksh-i-Rustan, and Hamadan.

The second kind is called the Median, because it takes the second place in the trilingual inscriptions, under the conquering Persians, but over the conquered Assyrians, and as the Medes stood somewhat in that relation to these two nations, that name was selected. Another name, 'Scythic,' has been proposed, or, by way of compromise, 'Medo-Scythic,' and the language—supposed to have been spoken by those innumerable Tartaro-Finnic tribes which occupied the centre of Asia—has been pronounced to be a Turanian dialect. But the process of constructing out of such slender elements as Samojed and Ostiak words a so-called 'Scythic,' is somewhat similar to the attempt of reconstructing Sanskrit from some detached and very doubtful French and English words. These inscriptions never occur by themselves [one instance again excepted], and being translations of the Persian records, about 90 names have been ascertained: and an alphabet of about 100 characters—combinations of a syllabic nature—has been established. The principal investigators of this character are Westergaard, De Saulcy, Hincks, Norris, and Oppert. Gobineau holds the language to be Huzvaresh, a mixture of Iranian and Semitic.

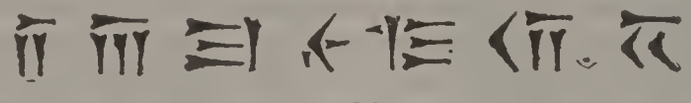
The third and most important is the Assyrian portion of the cuneiforms. The trilingual records gave the first clue to the deciphering of this character; but many original, more than a thousand years older, documents have since been found in Babylon, Nineveh, and other places near the Euphrates and Tigris, and even in Egypt. About 400 different signs have been distinguished on slabs, cylinders, barrels, prisms, of a phonetic, syllabic, and ideographic nature. Proper names are preceded by monograms, which give the same help to their readings as cartouches in hieroglyphics. Of those 400 signs, however, hardly one-tenth are known for certain. Proper names were found varied to about five times, and the characters themselves are both homophonous (same sound expressed by various signs) and polyphonous (same sign with various sounds). Five and more dialects have been distinguished in the language, which is decidedly Semitic (Gobineau takes it to be simply Arabic); and these dialects are supposed to have belonged either to different tribes or subsequent periods. It is this alphabet about which the greatest uncertainty and confusion prevail, for endless subdivisions, and even certain assumed grammatical forms, do not constitute a certainty. There is, however, a hope of its eventually being fully deciphered. A few years ago, the Asiatic Soc. submitted a cylinder of Tiglath-Pileser to four prominent investigators of the subject, and they independently read it nearly alike, with exception of the proper names, where they widely differed. Proof of the enormous importance of this character for history, grammar, law, mythology, archeology, and antiquities generally, is given by some of the records of which Rawlinson, a few years ago, proposed the publication (now in progress): Chaldæan Legends (B.C. 2000-1500); Bricks from Kilehsergat, of the early Kings of Assur (1273–1100), in a character approaching the cursive; Annals of Tiglath-Pileser I. (B.C. 1120); Annals of Sardanapalus, of Shamas, father to the biblical Pul, of the biblical Pul and Semiramis, his wife, of Sargon, Sennacherib, Assur-bani-Pal, son of Esarhaddon; Cylinder of Nebuchadnezzar; Cylinders containing the notice of Belshazzar, etc.; besides syllabaries, vocabularies, mathematical and astronomical tablets, calendars, and registers, and more than 1,000 mythological tablets. Nay, if the Birs-Nimrud really stands on the foundations of the old tower of Babel, we might in the bricks excavated at these very foundations read the language spoken at the time 'when the whole earth was of one speech.'

As to the origin of the character, nothing certain is known, or is likely to be known for some time. It is not unlikely that it was hieroglyphic, though neither the fishes nor the bees, which these letters are supposed to have been originally, seem to have more in their favor than the worms, which were said to be their unconscious authors. The following is the opinion of Rawlinson on this point: 'That the employment of the cuneiform character originated in Assyria, while the system of writing to which

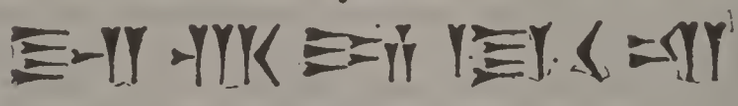
it was adapted was borrowed from Egypt, will hardly admit of question. Whether the cuneiform letters, in their primitive shapes, were intended like the hieroglyphs to represent actual objects, and were afterward degraded to their present forms; or whether the point of departure was from the Hieratic, or perhaps the Demotic character, the first change from a picture to a sign having thus taken place before Assyria formed her alphabet, I will not undertake to decide; but the whole structure of the Assyrian graphic system evidently betrays an Egyptian origin. The alphabet is partly ideographic and partly phonetic, and the phonetic signs are in some cases syllabic, and in others literal. Where a sign represents a syllable, I conjecture that the syllable in question may have been the specific name of the object which the sign was supposed to depict.' For the opinion that the cuneiform characters were invented by the primitive Accadian inhabitants of Chaldæa (who spoke an agglutinative language), see ASSYRIA. The Babylonian-Assyrian cuneiform language is Semitic in character, a half-sister to the Hebrew of the Old Testament. Its relation to the Hebrew is about as close as that between Italian and Spanish. The discoveries of the last half-century have produced great masses of this literature, clay-brick and clay-tablet volumes. There is in published form more than six times as much literature as is contained in the Hebrew of the Old Testament, and yet not one-quarter of all the inscriptions discovered has been published. The period of time covered by these documents reaches from prehistoric times or before 5000 B.C. down to the age anterior to, contemporaneous with, and subsequent to the Old Testament.

Subjoined is the name of Darius (Dariyavas, Tariyavaus), written in the Persian, Scythic, and Assyrian alphabets:

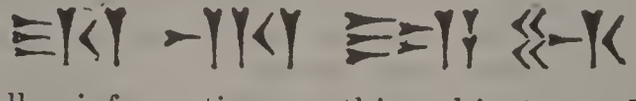
Persian.



Scythio



Assyrian.



For fuller information on this subject, see Rawlinson, *The Persian Cuneiform Inscription at Behistun deciphered and translated*, etc. (Journal As. Soc. 1846, etc.); Grotefend, *Erläuterungen der Keilinschriften aus Behistun* (Göttingen 1854); Lassen u. Westergaard, *Ueber die Keilinschriften der ersten und zweiten Gattung* (Bonn 1845); Hincks, *On the First and Second Kinds of Persepolitan Writing* (Transact. Roy. Ir. Soc. 1846); Norris, *Memoir on the Scythic Version of the Behistun Inscription* (Jour. As. Soc. 1853); Rawlin-

son, *A Commentary on the Cuneiform Inscriptions of Babylon and Assyria* (1850); Perrot and Chipiez, *A History of Art in Chaldea and Assyria* (London, 1884); Kaulen, *Assyrien und Babylonien nach den neuesten Entdeckungen* (1891); Rogers, *A History of Babylonia and Assyria* (New York, 1900); Goodspeed, *A History of the Babylonians and Assyrians* (New York, 1902); Price, *The Monuments and the Old Testament* (Chicago, 1905); and works by Benfey, Oppert, Renan, Spiegel, Schrader, Delitzsch, and others.

CUNEO: see CONI.

CUNETTE, n. *kū-nĕt'* [F.]: in *fort.*, a narrow ditch running at the bottom of a dry ditch for the purpose of draining it.

CUNICULATE, a. *kū-nĭk'ū-lāt* [L. *cunic'ŭlus*, a rabbit-burrow]: in *bot.*, having a long pierced passage or aperture.

CUNNER, or CHOGSET (*Ctenolabrus adspersus*), one of the commonest of shore fishes on rocky ledges along the New England coast, and found from Virginia to Newfoundland. It rarely attains a length of one foot, and is of a brownish-blue color with yellowish reflections; the teeth are strong and sharp. He is an excellent panfish, but a great pest to the professional fisherman whose bait it continually strips from the hook.

CUNNING, a. *kŭn'nĭng* [AS. *cunnan;* Goth. *kunnan*, to know: Sw. *kunna*, to be able: Icel. *kunnandi*, knowledge]: artful; sly; crafty; deceitful; trickish; in *Scrip.*, skilful; experienced: N. artifice; craft; shrewdness; deceit. CUN'NINGLY, ad. *-lĭ*, artfully; silly; craftily; skilfully. CUN'NINGNESS, n.—SYN. of 'cunning, a.': wily; designing; subtle; knowing.

CUNNINGHAM, *kŭn'ĭng-am*, ALLAN: 1785–1842, Oct. 21; b. Blackwood, in Dumfriesshire, England: poet and author. The circumstances of his parents were humble. At the age of 11, Cunningham was taken from school, and apprenticed to a stone-mason. He worked faithfully at his calling; but his spare time, and his evenings, were given to song and the collection of traditions. He appeared in print first as a contributor to Gromek's *Remains of Nithsdale and Galloway Song*. These contributions, purporting to be ancient ballads, were entirely the composition of the ingenious and ambitious stone-cutter. The publication gained him the acquaintance of Hogg and Sir Walter Scott. With the latter, 'Honest Allan' was always a prodigious favorite. On his removal to London, he became one of the best known writers for the *London Magazine*. He subsequently obtained a situation in Chantrey's studio as foreman, or confidential manager, and this office he held till his death. During his career he wielded an indefatigable pen. He wrote novels, poems, and a drama. His principal prose works, apart from his fictitious narratives, are *Lives of the Painters*, a *Life of Burns*, and a *Life of Sir David Wilkie*. He died in London. As a Scotch poet, he

ranks, perhaps, after James Hogg. His songs, though disfigured by false taste, mannerism, and a superabundance of ornament, have true lyrical impulse and movement.

CUNNINGHAM, John F., Roman Catholic bishop; b. Irremore, county Kerry, Ireland, July 1842. He was graduated at St. Benedict's College, Atchison, Kan., 1860; studied theology in Milwaukee, Wis., and was ordained priest at Leavenworth, Kan., 1865. He was pastor at Fort Scott, Kan., 1865-8; Lawrence 1868-76; Topeka 1876-82; rector of Leavenworth Cathedral 1882-98, and was consecrated bishop of Concordia, Kan., 1898, Sept. 21.

CUNNINGHAM, William, d.d.: 1805-61: theologian. He was ordained as a minister of the Church of Scotland, 1830. He was prominent in the discussions previous to the disruption, 1843, and was one of those who left the Establishment to form the Free Church. In 1847, he became principal of the New (Free Church) College, Edinburgh. He was author of *Historic Theology in the Christian Church* (1862), *Reformers and Theology of the Reformation* (1862), and *Discourses on Church Principles* (1863).—See *Life of Cunningham*, by Rainy and Mackenzie (1871).

CUNNINGHAM, William, English historical writer and clergyman: b. Edinburgh, 1849, Dec. 29. He was educated at Edinburgh and Cambridge and took orders in the Anglican Church in 1873. He was chaplain of Trinity College, Cambridge 1880–91, and lecturer there from 1891; was professor of economics at King's College, London, 1891–7, and was lecturer on economic history at Harvard University in 1899. He has published *Growth of English Industry and Commerce; Outlines of English Industrial History; Western Civilization; Modern Civilization in Economic Aspects; Use and Abuse of Money; Alien Immigrants to England; Path Toward Knowledge; Gospel of Work; Rise and Decline of Free Trade;* etc.

CUNNINGHAME-GRAHM, Robert Bontine, Scottish writer: b. 1852. He was educated at Harrow and sat in the House of Commons for North Lanarkshire 1886-92. He has published: *Notes on the District of Menteith* (1895); *Father Archangel of Scotland and other Essays* (1896); *Aurora la Cujini* (1898); *Journey in Morocco* (1898); *The Ipane* (1899); *Thirteen Stories* (1900); *A Vanished Arcadia* (1901); *Success* (1902); *Hernando de Soto* (1903); etc.

CUNNINGHAMIA, *kŭn-ĭng-hăm′ĭ-a:* genus of trees of the nat. ord. *Coniferæ*, nearly allied in botanical characters to the true pines and firs, but in foliage having considerable resemblance to the Araucarias. *C. Sinenois* is an evergreen tree, with narrow ovatolanceolate, stiff, and sharp-pointed leaves, common in China.

CUNONIA, n. *kū-nō′nĭ-a* [named after John Christian *Cuno*, of Amsterdam, who in 1750 described his own garden in verse]: genus of plants typical of the order

Cunoniaceæ. CUNONIACEÆ, Cuconiads, an order of perigynous exogens, of the alliance saxi fragalis.

CUP, n. *kŭp* [F. *coupe*—from L. *cupa*, a cask, a cup: It. *coppa*, a head, a cup. Ger. *kopf*, a cup, a knob: Skr. *kûpa*, a small cistern]. anything hollow; a small drinking-vessel; the contents of a cup; in *Scrip.*, sufferings or afflictions; any good received or evil endured: V. to draw blood by puncturing the skin and applying a cupping-glass; in *OE.*, to supply with liquor in cups. CUP'PING, imp.: N. in *surg.*, the operation of drawing blood with a cupping-glass: ADJ. pertaining to. CUPPED, pp. *kŭpt.* CUPS, n plu. the excessive drinking of intoxicants. CUP'PING-GLASS, a small glass vessel shaped like a cup from which the air can be exhausted, used for drawing blood or morbid matter. CUP'PER, n. *-pĕr*, a surgeon who draws blood by cupping. CUP-BEARER, n. one who attends on a prince. CUPBOARD, n. *kŭb'bŏrd*, originally a *board* or shelf for cups; a case of shelves for china-ware, etc. CUP-LICHEN [so called from the form of the thallus]: *Scyphophorus pyxidatus.* IN HIS CUPS, drunk with strong drinks. CUP AND CAN, familiar companions. CUP-AND-CONE, apparatus for charging iron furnaces, which are worked with clamped tops for collecting the waste gases. MANY A SLIP BETWEEN THE CUP AND THE LIP, always a danger of our surest hopes and expectations not being realized.

CUP, DIVINATION BY: mode of foretelling events, practiced by the ancient Egyptians, and still prevailing in some rural districts of England and Scotland. One of the eastern methods consisted in throwing in small pieces of gold or silver leaf into a C. of water, in which also were placed precious stones, with certain characters engraved upon them. The infernal powers were then invoked, and returned answer, either in an intelligible voice, or by signs on the surface of the water, or by a representation in the C. of the person inquired about. By the modern superstition among the most ignorant, a person's fortune is foretold by the disposition of the sediment in his tea-cup, after pouring out the last of the liquid.

CUPAR-ANGUS, *kū'par-ăng'gŭs:* town on the borders of Perthshire and Forfarshire, partly in both; on the left bank of the Isla, a tributary of the Tay, 12½ m. e. by n. from Perth, and 16 m. w.n w. from Dundee. It lies between the Grampian and Sidlaw Hills, in the centre of the valley of Strathmore, and from its position in this valley it is popularly called 'the capital o' the How.' It has extensive linen manufactures, with considerable traffic in timber. Near the town are the remains of two Roman camps, on one of which stand the ruins of a monastery, built 1164 by Malcolm IV., and destroyed at the Reformation. Recent excavations have exhumed numerous richly-carved tombstones in the graveyard contiguous to the parish church, evidently those that had marked the graves of the ancient dignitaries of the monastery. The abbey revenue 1562 was £1,234, 14*s.* 9*d* in money, and 182 chalders of victual. The classic hill of Dunsinane is situated about five m. s.w. of C., and the

dilapidated castle of the 'bold Pitcur,' who fell in the battle of Killiecrankie, 1689, is within two m. Pop. (1891) 2,106.

CUPAR-FIFE, *kū'par-fif:* royal, parliamentary, and municipal burgh, county town of Fifeshire, Scotland, near the middle of the peninsula of Fife, on the Eden, 9 m. from its mouth, 32½ m. n. of Edinburgh, and 14½ s. of Dundee. It lies in a beautiful vale, stretching e. and w., with a range of hills on the s., and a fertile country, with wooded eminences, on the north. It consists chiefly of two streets at right angles to each other. The chief manufactures are linens, bricks, and earthenware. A fortress of the Macduffs, thanes of Fife, anciently stood on a mound called the Castle Hill, at the e. end of the town. In former times, religious shows, mysteries, or moralities, were acted on a green esplanade in front of the castle, still called the Play-field. There was acted also the *Three Estates*, a celebrated satire on the priesthood, which hastened the religious revolution, and was written by Sir David Lindsay, whose estate of the Mount was near the town.—Pop. (1881) 5,010; (1891) 4,729.

CUPEL, n. *kū'pĕl* [L. *cupella*, a little cup; F. *coupelle*, the little pot in which goldsmiths fine their metals—from *coupe*, a cup]: a small-cup-like vessel, very porous, used in refining metals. CUPELLATION, n. *kū'pĕl-lā'shŭn*, the process of refining gold or silver by the cupel; a method of removing a more oxidizable metal from one less so (e.g. lead from silver), the oxidizing of the inferior metal being carried on by means of a blast of air—the fused oxide sinking into the porous cupel: see ASSAY.

CUPELLA'TION is the process of the separation of one metal from another (as lead from silver) by the use of a CUPEL highly heated in a muffle furnace: see ASSAY.

CUPHEA, n. *kū'fē-a* [Gr. *kuphos*, curved, in reference to the form of the capsule]: genus of perigynous exogens, order *Lythraceæ*, tribe *Lythreæ*.

CUPID, n. *kū'pĭd* [L. *Cupīdo*, Cupid—from *cupīdo*, desire]: the boy-god of love in anc. Roman mythology. The genealogy of this meddlesome divinity is rather confused. Sometimes he is represented as the son of Vulcan and Venus, or of Mars and Venus; at other times the mythologists seem at a loss to name his father, and make him spring from the sea-foam, like Venus herself. As among the Greeks, the myth of Eros gave birth to numerous *Erotes* or Loves, so at Rome, that of C. originated a legion of Cupids, who all possessed the same attributes as their prototype. Every one knows what these were: the bow, arrows, quiver, and wings. Often a bandage covered the eyes. The appearance was that of a chubby child, or youth with a malicious smile His darts could pierce the fish at the bottom of the sea, the birds in the air, and the gods in Olympus. The immensity of space was his home, but like his mother, he specially loved the flowery thickets of Cyprus.

CUPIDITY, n. *kū-pĭd'ĭ-ti* [L. *cupĭdĭtas*, a longing-desire: It. *cupidita:* F. *cupidité*—from F. *cupide*, greedy—

from L. *cŭpĭdus*]: an eager desire after the possession of wealth or power; avarice; greediness.

CUP OF BLESSING: a custom among the Jews, dating from very early rabbinical times which dictates the drinking of a cup of wine at stated ceremonies, on Sabbaths and festivals, after a meal when grace has been said, and on joyous occasions. The association of wine with religious duties inculcated moderation and doubtless prevented intemperance.

CUPOLA, n. *kū′pŏ-lă* [F. *coupole*—from It. *cupola*, a round vaulted chapel behind the chancel—from *cupo*, deep, hollow: a dim. of L. *cupa*, a cup, from its cuplike shape: an arched vault, hemispherical, or of any other curve, on the top of an edifice; a round top or dome, sometimes of glass, shaped like a half-globe: see DOME: V. to make in the form of a dome; to cover a war-ship with plates of iron in the form of a half-globe or dome. CU′POLA′-ING, imp. *-lā′ĭng*. CU′POLAED, pp. a. *-lād*, having a hemispherical roof or covering.

CUPOLETTE, n. *kū′pō-lĕt* [a dim. of CUPOLA, which see: L. *cu′pūla*, a little cup—from *cupa*, a cup]: a game for outdoor amusement, in which the players have seven wooden pins fixed in the ground, each having a cup and a movable ball on its top.

CUP′PING: application of cups from which the air has been exhausted, to the skin with the object of causing congestion or excessive fulness of the cutaneous blood-vessels; and if it should be thought desirable to withdraw some blood, the skin may be cut or scarified, and the exhausted cups applied over the incisions, to favor its flow.

Cupping has been a part of surgical practice from earliest times, and instruments for performing it have been found in use among the least civilized nations. Of old, the cups were either small horns, open at both ends, from which the air was withdrawn by suction at the narrow extremity, or glasses of various shapes, with a small hole in the bottom of each. This hole was plugged with wax, the air exhausted by heat, and when the operator wished to remove them, he withdrew the plug, and allowed the air to enter. The modern cups are of glass, with round or oval mouths, and closed bottoms. Some have small sockets for holding cotton wick in their interior.

The principal improvements have been in the methods of incising the skin. This used to be effected with a common lancet or narrow knife, with a short blade and convex edge, set in a long elastic handle, which the operator struck rapidly with his finger, so as to drive the blade 26 or 30 times into the skin.

This was so tedious an operation, that a number of similar blades were used at once. These are contained in a box which has slits pierced in it corresponding to the number of blades; the latter can be caused to emerge at

these slits by turning a handle, or more rapidly by setting free a spring, which causes them to revolve suddenly, and in doing so protrude at the slits more or less, according to the will of the operator. The operation is thus performed. The scarificator, glasses, torch, spirits of wine, and a lighted candle are placed ready at hand; the part is sponged with hot water, to cause an increased flow of blood into it, then dried with a warm towel; the torch, previously saturated with the spirits of wine and lighted, is held for an instant in one of the glasses, which is now clapped on to the skin. The number of glasses depends on the quantity of blood it is thought desirable to abstract; each one will probably withdraw from three to five ounces. When the skin under the glass has become red and swollen, the cupper removes it, applies the scarificator, and as rapidly as possible again exhausts the air from the glass, and claps it on again. The blood will now flow into it; and when enough has been taken, the glass is removed, and some lint applied to the wounds. This apparently simple proceeding requires considerable skill, so that cupping is practised as a separate profession in large towns, and the medical boards of the public services require that candidates for their appointments should produce a certificate of having received special instruction in the art. The difficulties consist in regulating the depth of the cuts, for should they be either too deep or too shallow, the blood will not flow. If the glasses be completely exhausted of air, their rims hurt the patient, and the blood will not flow, and it has happened that arteries or large veins have been wounded by ignorant operators.

There are many modifications of the ordinary cupping apparatus, but all on the same principle.

Dry Cupping is simply applying the cups as described but not wounding the skin. The ancients had a high opinion of this method, as they believed the 'noxious humors' were drawn forth of the body into the cups; and it need scarcely be added that extempore cups may be found in tumblers, finger-glasses, or any air-tight vessel with a smooth rim.

CUPPLES, George, Scottish sketch and story writer: b. Legewood, 1822, Aug. 2; d. 1891, Oct. 7. His best known work is *The Green Hand*, a stirring tale of the sea.

CUPPLES, Samuel, American manufacturer: b. Harrisburg, Pa., 1831, Sept. 13. At the age of 12 he was employed in a grocery store in Pittsburg, but removed to Cincinnati in 1846, where he entered a wooden-ware establishment. In 1851 he was sent to Saint Louis to establish a branch house there, which as the house of Samuel Cupples & Company became widely known. In 1883 this was recognized as the Samuel Cupples Woodware Company, of which its original founder is still president. It is the largest business of its kind in the world, its trade equaling in amount that of all other

wood-ware houses in the United States. He has taken a warm interest in education and has done very much to sustain the school system of Missouri. He was the original promoter of the Saint Louis Manual Training School and his gifts to educational institutions have amounted to several millions.

CUPREOUS, a. *kū′prĭ-ŭs* [L. *cuprĕŭs*, of copper—from *cuprum*, copper: It. *cupreo*]: of or like copper; coppery. CUPRIFEROUS, a. *kū-prĭf′ẽ-ŭs* [L. *fero*, I bear]: yielding copper—applied to veins, rocks, etc., containing ores of copper. CU′PRITE, n. *-prīt*, the red oxide of copper, the richest of the copper ores. CUPRIC, a. *kū′prĭk*, applied to an oxide of copper, and CUPROUS, a. *kŭ′prŭs*, to its corresponding salt.

CUPRESSITES, n. plu. *kū-prĕs′īts* [L. *cupres′sus*, the cypress-tree]: in *geol.*, a general term for all coniferous remains which are allied to those of the existing cypress, or identical with them.

CUPROID, a. *kūp-royd′* [L. *cuprum*, copper: Gr. *eidos*, form]: resembling copper: N. a crystal of the tetrahedral type, with twelve equal angles.

CUPULA, n. *kū′pū-lă*, or CU′PULE, n. *-pūl* [L. *cūpŭla*, a little cup—from *cūpa*, a cup]: in *bot.*, an external covering to a fruit formed of modified bracts, as in the oak, in which the cupule is the cup of the acorn, in the hazel in which it is the husk of the filbert. CU′PULIF′EROUS, a. [L. *fero*, I bear]: bearing cupules. CUPULIFERÆ, or CORYLACEÆ, nat. ord. of exogenous plants, consisting of trees and shrubs, natives of temperate climates. The leaves are alternate and furnished with stipules. The male flowers, sometimes also the female flowers, are disposed in catkins (and this order is regarded by many botanists as a sub-order of AMENTACEÆ (q.v.); the stamens are 5–20, inserted into the base of scales or of a membranous perianth; the ovary is crowned by the rudiments of a persistent perianth, and surrounded by a cupule of various figure; there are several cells and ovules, but the greater part of the ovules are abortive; the fruit is a 1-celled nut, more or less enclosed in the cupule; the seed is usually solitary; the embryo large, with fleshy cotyledons and minute superior radicle.—This order contains many of the most important trees of Europe and America, including all the different kinds of oak, beech, chestnut, and hazel, the hornbeam, etc. Many species are natives also of tropical countries, but only at considerable elevations.

CUR, n. *kẽr* [Dut. *korre*, a house-dog: prov. Sw. *kurre*, a dog: Icel. *kurra*, to murmur: Dan. *kurr*, to woo, to whirr: comp. Gael. *caora*, a sheep, a worthless dog: Welsh *cor*, a dwarf, anything small; *corgi*, a small dog]: name given sometimes indiscriminately to small dogs of any kind not highly valued, and in this way often appropriated particularly to dogs of mongrel or degenerate breed; but used also by naturalists as the common designation of many races, of which the terriers (q.v.) may be considered as

type; all of them of small size, and exhibiting in a high degree the capacity for domestication, along with activity and sagacity. These races are distributed over all parts of the world, and differ considerably from each other, and are found domesticated even among very rude and savage tribes. The Pariah dog of India is reckoned among them, and exists in that country both in a wild and in a domesticated state; its body is more lank than that of the cur races of Europe, as are also the dogs that infest the streets of towns in Turkey, Persia, etc. The curs may have been the first domesticated dogs. CUR'RISH, a. *-rĭsh;* CUR'-LIKE, a. like a cur; having the qualities of a cur.

CURABLE, CURABILITY, etc.: see under CURE.

CURAÇOA, *kū-ra-sō'* or *-sō'a* or CURACAO, *kô-râ-sâ'-o:* most important of the Dutch W. India Islands which lie near the n. coast of Venezuela, in the Caribbean Sea. Pop. (1900) Curaçoa, 30,828; Bonaire, 5,086; Aruba, 9,702; Netherlands part of St. Martin, 3,174; St. Eustatius, 1,334, and Saba, 2,117; entire pop. 52,301, all free. The people nearly all are Rom. Cath. One-third are emancipated negroes. The cap. of Curaçoa is Willemstad or Curaçoa, a very handsome town on the bay of St. Anna: pop. 13,000. The soil of Curaçoa and its dependent islands is less productive than that of other tropical lands. The exports are maize, beans, cattle, salt, phosphate of lime, red dye-wood, charcoal, bricks, and fruits. Goat, kid, and deer skins are exported in large numbers. Provisions have to be imported, to some extent, so poor is the soil; though tamarinds, bananas, cacao, oranges, sugar, tobacco, and maize are grown. The trade is mainly with the United States. Curaçoa (spelled also *Curassou*) was discovered by Spain 1527, taken by the Dutch 1634, conquered by the English 1807, and restored to Holland 1815.

CURAÇOA, n. *kū-ră-sō'* or *kū'ră-sō'ă* [from the island of *Curaçoa,* where first made]: liqueur, made either from the small oranges called Curaçoa oranges, or from orange-peel, by digesting in sweetened spirits, with a little cinnamon, and often a little mace or cloves. The spirits used are generally reduced to about 56 under proof, and contain about $3\frac{1}{2}$ pounds of sugar per gallon. Curaçoa is often colored by digesting in it for a week or ten days a little powdered Brazil wood, and mellowing the color by means of burned sugar.

CURAÇOA ORANGES: small oranges which have fallen from the tree long before maturity. They have properties similar to those of orange peel, but are more bitter and acrid.

CURARE, or CURARI, *kū-râ'rē* [from a native name]: South American arrow-poison which completely paralyzes the motor nerves; also spelt URA'RI or WOORA'RA, and WOURA'LI or WOORA'LI. CURA'RINE, n. *-rĭn,* the active principle of curare. It is by means of this position that the small arrows shot from the blowpipe (q.v.) become so deadly. Its exact composition is unknown, but it is certain

that the juice of some species of *Strychnos* is always present No species of *Strychnos* that is now known, however, has the same physiological action that curari has. Its method of preparation is kept secret and it is probably true that each tribe has its own method of preparing the poison. The physiological action of curari is unique. It is a type of pure motor paralysant, affecting the motor end organs in voluntary muscles. In death by poisiong from curari, the muscles of respiration becoming paralyzed, asphyxia results. Therapeutically, curari is of secondary service. Its varying composition and uncertain strength make it dangerous, and theoretically it would be indicated only in motor disorders of the voluntary muscles such as convulsive tics, torticollis, hydrophobia, etc. In the treatment of poisoning, artificial respiration is the best procedure.

CURASSO, n., or Curassow, *kū-răs'sō*, also Hocco (*Crax*): genus of large gallinaceous birds of the family *Cracidæ*, having a strong bill surrounded at the base with a skin—sometimes brightly colored—in which the nostrils are pierced, and the head adorned with a crest of feathers curled forward, which can be raised and depressed at pleasure. The species, which are not numerous, are natives of the forests of the warm parts of America. They congregate in flocks, and although they live much among the branches of trees, their habits greatly resemble those of domestic poultry. They are very unsuspicious of danger, until taught by severe experience; and are easily domesticated. The best known species (*C. Alector*) is about the size of a turkey, its plumage is almost entirely black. It is abundant in the forests of Guiana. Its flesh is very good eating. It is kept in poultry-yards in S. America, and was introduced into Holland at the close of the last century, where it seemed completely acclimated, but the stock was lost amid the troubles which ensued on the French Revolution.

CURATE, n *kū'rāt* [mid. L. *curātus*, a priest, a curate: L. *curātor*, he who cares for—from *curārĕ*, to take care of; It. *curatore;* F. *curateur*, a guardian: F. *curé*, a parson, a curate]: one who has the cure or care of souls, in which sense the term is used in the Church of England Prayer-book, 'all bishops and curates.' It is, however, generally used to denote the humblest degree in the Church of England. A curate in this sense, is a minister employed by the incumbent of a church, (rector or vicar), either as assistant to him in the same church, or else in a chapel of ease within the parish belonging to the mother church. He must be licensed and admitted by the bishop of the diocese, or by an ordinary having episcopal jurisdiction, who also usually appoints his salary. Any curate that has no fixed estate in his curacy, not being instituted and inducted, may be removed at pleasure by the bishop or incumbent. In general, the salaries of curates, certainly the most defenseless and the hardest-worked, and not the least devoted of the English clergy, are shamefully small; and

reform in this matter is urgently required. PERPETUAL CURATE, one appointed where tithes are impropriate, and no vicarage was ever endowed; such curates are not removable, and the impropriator is obliged to maintain them. CU'RACY, n. *-ră-sĭ*, the office or employment of a curate. CU'RATESHIP, n. the office of a curate; a curacy. CURA'TOR, n. *-rā'ter*, one who has care or superintendence of anything; a guardian or trustee. CURATORY, n. *kū'ră-tĕr-ĭ* the persons employed as curators. CURATOR BONIS, *kū-rā'tŏr bō'nĭs* [L. *curātor*, he who cares; *bŏnis*, for the goods]: a guardian or trustee over property: in *Scot.*, an officer appointed by the court to manage the property of a person who is unable temporarily or permanently to undertake its management: see GUARDIAN.

CURB, n. *kĕrb* [F. *courber*, to bend, to crook—from F. *courbe*, a curve—from L. *curvus*, crooked: Gael. *crup*, to crouch: Manx, *crib*, to curb]: the flat iron chain fastened to the upper part of the branches of a bit; a check; restraint; hindrance: V. to guide or restrain by a curb, as a horse; to check or restrain; to hold back; to keep in subjection. CURB'ING, imp. CURBED, pp. *kĕrbd*. CURB'LESS, a. CURB-BIT, stiff-bit having branches by which leverage is obtained upon the jaws of a horse. CURB-ROOF: see MANSARD ROOF. CURB-STONES [comp. Gael. *cearb*, a fringe, a skirt]: a row of stones along the edge of a pavement, or skirting it; in *Scot.*, also written *kerb* or *kirb*.—SYN. of 'curb, v.': to restrain; repress; control; check; bow; subject; subdue; confine.

CURB MARKET: a term used to designate an independent and less organized exchange for the purpose and sale of securities not recognized in the official exchange lists. Such markets exist in London, Paris and New York, and receive the name from the fact that the transactions are usually carried on about the curb of the street adjacent to the stock exchanges. The operations are usually in a larger degree speculative; and in the absence of organized control and responsibility, shares having little or no value are frequently given an unmerited standing. The 'curbs' serve a useful purpose, however; in providing a market for new securities of a legitimate character; and many brokers, members of the official exchanges, have representatives there on that account. See EXCHANGES.

CURD, n. *kĕrd* [W. crud, a round lump: F. *crottes*, the lumpy dung of sheep: AS. and Scot. *crud*, coagulated milk—the old spelling *crud* is more true to the origin: Gael. *gruth;* Ir. *cruth*, curds: comp. Gael, *gruthach*, coagulated]: the cheesy matter or coagulum that separates from milk on the addition of rennet or an acid; any coagulated matter; V. to turn to curd. CUR'DING, imp. CUR'DED, pp. CUR'DY, a. *-dĭ*, like curd; full of curd. CURDLE, v. *ker'dl*, to thicken or change into curd; to coagulate; to stagnate or congeal. CURDLING, imp. *kĕr'dling*. CURDLED, pp. *kĕr'dld:* ADJ. coagulated; congealed.

CURE, n. *kūr* [F. *cure*, care, doctoring—from L. *cura*, care, pain; mid. L. *cura*, the care of souls: It. *cura*]: the act of healing; restoration to health; a remedy for a disease; a care of souls; the spiritual charge of a parish; the parish itself: V. to heal; to restore to health; to remedy; to remove an evil; to salt, pickle, or dry for preservation. CU'RING, imp. CURED, pp. *kūrd*. CURE'LESS, n. that cannot be cured. CU'RER, n. *-rër*, one who cures; one who prepares salted or cured fish or flesh, as *fish-curer*. CU'RABLE, a. *-ră-bl*, that may be healed. CU'RABLENESS, n. CU'RABIL'ITY, n. *-bĭl'ĭ-tĭ*, possibility of being cured. CU'RATIVE, a. *-rā-tĭv*, tending, or having the power, to heal.

CURFEW, n. *kėr'fū* [F. *couvre-feu:* OF. *covre-feu*, cover-fire—from OF. *covrir*, to cover; F. *feu*, fire]: in ancient times in Europe, the ringing of an evening bell, as a signal to the people to cover up fires, put out lights, and retire to rest. To William the Conqueror is ascribed the introduction of the curfew bell into England. The time for ringing these bells was sunset in summer and about eight o'clock in winter; and certain penalties were imposed upon those who did not attend to the signal. The practice of ringing the curfew bell appears to have prevailed throughout Europe long before the era of the Norman Conquest, its object being protection against fires then so frequent and destructive, owing to dwellings being chiefly of wood. The custom of ringing the curfew bell at eight or nine o'clock, is still continued in many parts of England, and has lingered in parts of New England, though its original significance has long been lost.

CURIA, n. *kū'rĭ-ă* [L. *curia*, the senate or senate-house]: in *anc. Rome*, the senate or senate-house; the assembly of the counts and prelates of the empire; the pope with his council, or *ex cathedrâ*, as head of the church; any ecclesiastical court or authority. CURIAL, *kū'rĭ-ăl* [It. *curiale*, a lawyer]: in *Italy*, a lawyer; ADJ. of or belonging to the curia.

CU'RIA MU'RIA ISLANDS: see KOORIA MOORIA ISLANDS.

CURIE, *kŭr'ē*, PIERRE, French scientist, and (in conjunction with his wife) discoverer of radium: b. at Paris, 1859, May 15; d. at the same place, 1906, April 19, from being run over by a heavy wagon. An unpromising boy at school, his father placed him in the Sorbonne, with a view to his becoming an ecclesiastic. But having developed a taste for scientific research, he advanced rapidly in that line, and in 1895 became professor of physics at the School of Physics and Chemistry of the city of Paris. In 1901 he was made *chargé de cours* for physics at the Sorbonne, and two years later, 1903, the announcement of the discovery of radium was made, for which he and his wife were jointly awarded the Davy medal of the Royal Society, and the same year the Nobel prize for physics was divided between them and M. Henri Bec-

querel. In 1904 the French Chamber of Deputies unanimously voted 18,700 francs to found a chair of physics for Curie at the Paris Faculty of Sciences, and the following year he won a medal in the Academy of Sciences. He refused the decoration of the Legion of Honor, and, after a long period of obscurity, poverty and hard work, he died poor, though famous beyond the dreams of the average man. Modest to a degree, he always gave his wife the credit for the discoveries which they made jointly, and their married life was ideal in its manifestations of mutual love and confidence.

Mme. Curie, whose maiden name was Sklodowska, *sklō′dŏs-kä*, was born in Warsaw, Poland. Unlike her distinguished husband, she was a brilliant pupil in early youth, but her father, a professor in a Warsaw college, being too poor to pay her tuition, she was admitted as an assistant to clean his scientific instruments, and thus obtained the education of which she would otherwise have been deprived. She subsequently taught in Germany, and then went to Versailles to lecture, where she met M. Curie. They lived together in great happiness, prosecuting the researches in the field of science so dear to both. Their discoveries have not only enriched physical science, but they have revolutioned the whole theory of material creation, in the disprovement of the atomatic theory. A few days after her husband's death Mme. Curie was appointed to succeed him as lecturer on physical science at the Sorbonne, the first instance of a woman having received such distinction in France.

CURIOUS, a. *kū′rĭ-ŭs* [OF. *curios*, careful—from L. *curĭōsus*, full of care, inquisitive—from *cūra*, care, attention· *It. curioso;* F. *curieux*, curious, inquisitive]: strongly desirous to know or see; inquisitive; prying; wrought with elaborate care and art; difficult to please; singular; rare. Cu′riously, ad. *-lĭ*. Cu′riousness, n. Cu′rios′ity, n. *-ŏs′ĭ-tĭ*, a strong desire to see or to know; that which excites a desire of seeing; a rarity. Curioso, n. *kū′rĭ-ō′zō* [It.]· one fond of collecting rare and curious articles; a virtuoso.

CURIOSITY (In Psychology): The bodily attitude that men and animals of the higher species generally take towards new and strange objects and fresh situations is called curiosity. It is clearly instinctive in character and yet it differs from most of the instincts in the fact that no particular or definite object excites the act. It is the unfamiliar part or aspect of objects and situations that awakens the response of curiosity. Its character may best be seen in a description of an act of curiosity on the part of cattle. Let a person go out into a pasture where cattle are grazed and sit down quietly. As soon as the cattle catch sight of the strange object, they will gaze fixedly at it for a time and then begin a slow approach, sniffing the air and bellowing mildly. They stop, paw the ground and again approach now with heads and tails raised in the air. They bellow louder and call to their

fellows of the herd. They now begin to circle about rather than approach directly and show increased excitement mixed with much caution and hesitation. The slightest movement of the person will set the cattle flying in retreat. With some variations of minor character these observations may be made upon horses. Hunters describe the conduct of antelopes toward motionless objects in a similar manner. In fact these animals may be drawn near enough through curiosity alone to be shot. Small children not accustomed to the company of other children behave towards others in a manner that is strikingly similar. Two children placed near together and observing one another for the first time will approach slowly and with much caution, circling about one another, and come together actually only after a considerable period of curious examination. The purpose of curiosity is plainly to bring men and animals into touch with new objects that serve better their purposes than the objects of the older environments. Its lies at the basis of increasing the variety of environments and multiplying the adaptations of animals. Among men it is the means by which the boundaries of knowledge are extended.

CU'RISCHES HAFF: see KURISCHES HAFF.

CURL, n. *kėrl* [formerly written *crull:* Dut. *krul;* old Dut. *krol;* Low Ger. *krukel*, a curl—from the sense of a vibratory movement, and thence of a spiral or twisted form: Ger. *kollern*, to rumble: Dut. *krullen*, to crumple]: a ringlet of hair or anything like it; a disease of potatoes in which the leaves of the stalks are curled: V. to turn, form, or bend into ringlets, as the hair; to twist; to coil; to rise in twisting or sinuous waves; to play at the game of curling. CUR'LING, imp.: ADJ. rising in wreaths or undulations. CURLED, pp. *kėrld.* CURLY, a. *kėr'lĭ*, having curls; full of ripples. CUR'LINESS, n. CUR'LINGLY, ad. *-lĭ.* CUR'LING-TONGS or -IRONS, an instrument for curling the hair. CURLY-HEADED, having hair curled naturally.

CURLEW, n. *kėr'lû* [the name imitative of the shrill cry of the bird: F. *courlis* or *courlieu*: OF. *corlieu*: It. *chiurlo*], (*Numenius*): genus of birds of the order *Grallatores;* of the same family (*Scolopacidæ*) with the snipe, woodcock, avocet, stilt, godwit, etc. The bill is long, slender, curved, and compressed; the face and head are feathered; the legs are slender, and part of the *tibia* is naked as well as the shank; the tail is short, and the folded wings extend about as far as the tail. The common curlew (*N. arquata*), the *Whaup* of the Scotch, is a bird of wide geographic distribution, found in tropical temperate, and arctic regions of the old world and in Australia; frequenting sea-shores in winter, and elevated moors in summer. Its peculiar cry or whistle is among the well known characteristics of many upland scenes. It feeds on worms, mollusks, and insects. Its long bill enables it to seek its food in marshy or boggy ground. It builds a slight nest of leaves or other dry ma-

terials, in some tuft of rushes or among long grass or heath, in which four eggs are laid. The C. is good eating.—The WHIMBREL (*N. phæopus*) is a smaller species of C., much resembling the Common Curlew; also very widely distributed in the old world; it frequently occurs on the shores of Britain, but seems to breed only in the most northerly moors. N. America has several species of C., some of which extend their summer migrations to very northerly regions. The ESQUIMAUX C. (*N. borealis*) is sometimes seen migrating in dense flocks.

CURLING, n. *kĕr'lĭng* [said to be a mere corruption of Ger. *kurzweil*, a game (see CURL)]: in *Scot.*, a winter outdoor game played with smooth stones on the ice. CUR'LERS, n. plu. players at the game of curling.—Frozen lakes and rivers serve for the game; but under the auspices of C. clubs, artificial shallow ponds are maintained for this popular national sport, and the set matches are contested with immense spirit. The sport is regulated by a body of rules issued by a central association called the Caledonian Curling Club, which has grand matches in which hundreds are engaged at least once, if possible, every winter. A pleasing peculiarity of C. is, that it produces a thorough mingling of ranks—peers, peasants, clergymen, farmers, country gentlemen, and tradesmen, all mingling hilariously and familiarly for the occasion. The sport belongs particularly to the s.w. division of Scotland. Latterly, it has migrated to England, Canada, and the United States, where Scotsmen can find ice of sufficient strength and keenness. C. is played with flattish circular hard stones,

The Rink.

about nine inches in diameter, prepared by stone-hewers, each stone weighing from 30 to 45 lbs. Each of the players has a pair. The stones are provided with handles, to enable the player to hurl them on the ice with the proper degree of force. As at bowls, the stones are hurled to an assigned point or mark. The game is as follows: Sides are made up, usually consisting of four against four, with a director styled *skip* for each; after which a certain area of ice, 30 to 40 yards in length, and eight or nine ft. across, is chosen. This is called the *rink*. Certain marks are then made at each end of the rink, consisting of several concentric rings, called *broughs*, and a centre, called the *tee*. A certain number is game, usually 31. One on each side plays alternately. The chief object of the player is to hurl his stone along the ice, toward the tee, with proper strength and precision; and on the skill of the players in placing their own stones in favorable positions, or in driving rival stones out of favorable positions, depends nearly all the interest of the game. At a certain distance from each of

the tees, a score—the *hog-score*—is drawn across the ice; any stone not driven beyond this mark, counts nothing, and is laid aside. For laws of C., and general remarks, see *The Channel-Stane*, and two reprints, published by Mr. Cameron of Edinburgh in 1883.

CURMUDGEON, n. *kĕr-mŭj'ŭn* [probably from *corn mudgin*, a dealer in corn—such persons in former times being supposed to keep up the price of corn from avarice: *mudgin*—from OF. *muchier*, to hide, to conceal—*lit.*, one who withheld or hoarded up corn]: an avaricious, churlish fellow; a miser; a griping, disagreeable man. CURMUDGEONLY, ad. *-lĭ*, in an avaricious, churlish manner. *Note.*—Dr. Mackay gives the origin of this word from Gael. *cearr muigean*, a wrong-headed, perverse fellow—from *cearr*, wrong, perverse, and *muigean*, churlish.

CURMURRING, n. *kĕr-mĕr'rĭng* [an imitative word]: a rumbling sound, as in the stomach.

CURRACH, n. *kur'rak, ch* guttural in Scotch; also CORACLE, *kŏr'a-kl* [Celt. *corwg, curach;* L. *curuca, carrocium, carabus* (see CORACLE)]: in *Scot.*, and in *Britain* generally, a small skiff; a small boat of wicker work, covered anciently with the skins of animals; now a boat of wicker-work, or of a slender frame of wood, covered with tarred canvas. Skiffs of this sort, as well as canoes hollowed out of the trunks of oaks, were in use among the Britons in the earliest times of which we have record. Julius Cæsar, who built some of them after the British model, tells us that the keel and gunwales were of light wood, and the sides of wicker, covered with hides. Similar descriptions are given by Pliny, Lucan, Solinus, Festus Avienus, Sidonius Apollinaris, and others. The first occurrence of the name seems to be in Gildas, who wrote in the 6th c.; he speaks of the C. as in use among the Scots and the Picts. A long voyage in the North Sea, made in a C., during the same century, by one of the companions of St. Columba, is commemorated by Adamnan (died 704). In 878, three Irish missionaries sailed in a C. from Ireland to Cornwall; the voyage occupied seven days; and the size of the C. is indicated by the remark that it was one of two skins and a half. An old life of St. Patrick speaks of a C. 'of one skin, with neither helm nor oar.' The C. of a larger size had a mast and sail. The C. still continues in use on the Severn, and on many parts of the Irish coast, especially on the shores of Clare and Donegal. The last C. known to have been used in Scotland is in the museum at Elgin. It was employed on the Spey, toward the end of last century. Shaw, whose *History of Moray* was published 1775, when the C. had be-

Modern Coracle.

come rare, thus describes it: 'It is in shape oval, near three ft. broad, and four long; a small keel runs from the head to the stern; a few ribs are placed across the keel, and a ring of pliable wood around the lip of the machine. The whole is covered with the rough hide of an ox or a horse; the seat is in the middle; it carries but one person, or, if a second goes into it to be wafted over a river, he stands behind the rower, leaning on his shoulders. In floating timber, a rope is fixed to the float, and the rower holds it in one hand, and with the other manages the paddle. He keeps the float in deep water, and brings it to shore when he will. In returning home, he carries the machine on his shoulders, or on a horse.' One who figures in the *Dunciad*—Aaron Hill the poet—by showing the Strathspey Highlanders how to make their timber into a navigable raft, hastened the disappearance of the C. from Scotland. For description of the C., as still used in Ireland, see the *Ulster Journal of Archæology*, I. 32. A boat of bison skin, essentially the same with the British coracle, is in use among some of the Indians of N. America.

CURRAN, *kŭr'an*, JOHN PHILPOT: 1750, July 24—1817, Oct. 14; b. Newmarket, county Cork, Ireland: legal and parliamentary orator. He was educated at Trinity College, Dublin; and in 1773, having resolved to adopt the law as a profession, went to London and entered himself at the Middle Temple. Two years later he was called to the Irish bar, where his humorous, flowery, and sarcastic speech secured him immediate success, which his attractive social qualities did much to extend. In 1782, he obtained a seat in the Irish parliament as member for Kilbeggan, his general policy being in unison with that of Grattan and the few other liberal members then in the house. In debate, C. was usually charged with the reply to opponents, for which important duty his ready speech and cutting retort admirably qualified him. But his sarcasm led him into several duels, in which fortunately little harm was done on either side. In 1788, he was in favor of the formation of Irish volunteers; and in subsequent years, he was constant and eloquent in his appeals to government to adopt a different policy toward Ireland, lest that which it was pursuing should drive the people to rebellion. Government gave no heed, and the rebellion of 1798 was the consequence. C. had retired from parliament before the Union, of which he was a warm opponent. He was appointed master of the rolls in Ireland 1806, resigning 1813. He died in London. C. is best remembered for his wit and gayety, of which many excellent examples are preserved in the various Memoirs, Recollections, etc., of him which have been published.

CURRANT, n. *kŭr'rănt* [from *Corinth* in Greece, whence they were first brought: comp. Gael. *caor*, a berry; *caoran*, berries, particularly of the mountain-ash]: name originally belonging to a small kind of grape, and transferred, in consequence of the similar size of the fruit, to many species of the genus *Ribes*, which is the most

important and almost the only genus of the nat. ord. *Grossulariaceæ*. The species known as *currants* are destitute of spines, and have the flowers in racemes: the spiny species are known by the name GOOSEBERRY (q.v.). Among the fruit shrubs commonly cultivated is the RED C. (*R. rubrum*), *Grosseille* of the French, native of woods and thickets in the south of Europe, found also in parts of Asia and largely in N. America, perhaps rather a naturalized than a truly native plant in Britain. It has long been cultivated, though it does not appear that it had a place in the gardens of the ancient Greeks or Romans. The berries are used for dessert, for pies, and for jelly; also for making an agreeable and refreshing beverage, called in France *Eau de Grosseilles* (made of the juice of the fruit, water and sugar, strained, and iced), and a well-known fermented liquor called *Currant Wine* (q.v.).—The WHITE C. is a mere variety of the Red, result of cultivation, with fruit less acid, and more fit for dessert, generally also rather larger. There are many sub-varieties, and many intermediate shades of color. Both the Red and the White are trained either as standard bushes, or against walls, the latter treatment producing larger and finer fruit, and both are sometimes trained on a north wall, to retard their ripening till after the ordinary season. They grow readily, like the shrubs of this genus in general, from cuttings.—The BLACK C. (*R. nigrum*), *Cassis* of the French, grows in moist woods, and on the banks of streams in Europe and the north of Asia. The fruit is much larger than the Red C., and cultivation has lately produced varieties remarkable for size. There is a variety in Russia with yellow berries. The Black C. is not so much cultivated in Germany and Holland as the Red, and is comparatively neglected in England, but is to be found in almost every garden in Scotland. In the Hebrides and Shetland Islands the Black C. grows as luxuriantly, and bears fruit as abundantly as in any part of the world. The jelly and preserve made from it are useful for sore throats, as is also *Black C. Vinegar*, made in the same manner as Raspberry Vinegar. In Russia, the berries are gathered in large quantities in the woods, and dried in ovens, to be used in pies. They are tonic, also slightly diuretic and sudorific. A liqueur, called *Liqueur de Cassis*, is prepared in France from the Black C., the manufacture of which has recently acquired a great importance in the Côte d'Or and neighboring departments. The town of Dijon contains more than 30 manufactories, and produced recently, in one year, not less than 220 000 gallons, the wholesale price of which—of the best quality—was equal to abt. 57 cents per quart. Large tracts of land are planted with the Black C. to supply the liqueur manufactories.—Many other species of C., producing berries somewhat similar to those of the species cultivated, are found in temperate and cold climates in almost all parts of the world. One with beautiful red berries, larger than the largest English Red C., occurs on the Himalaya at an elevation of 13,000 ft.—The RED-FLOWERED C. (*R. sanguine-*

um), now common as an ornamental bush in shrubberies, and trained on walls, producing in April a profusion of deep-red flowers in large drooping racemes, is a native of the n.-w. of America. Its bluish-black, mucilaginous, insipid berries are not, as is popularly believed, poisonous. —The GOLDEN C. (*R. aureum*), also a very ornamental shrub, from the same regions, has a tubular calyx and long golden yellow flowers. Its fruit is either yellow or black, and of fine flavor.—The name NATIVE C., or AUSTRALIAN C., is given in Australia to the berries of different shrubs, particularly the white berries of *Leucopogon Richei*, of the nat. ord. *Epacridaceæ* (q.v.). The French naturalist Riche, who was attached to D'Entrecasteaux's expedition, supported himself mostly on these berries for three days, when he had been lost by his companions. Other fruits bearing the same name, though greatly inferior, are produced by species of *Coprosma* (nat. ord. *Cinchonaceæ*).

CUR'RANT WINE is made of the juice of red or white currants, to which is added about one pint of water for every four pints of berries employed. About a pound and a half of sugar is afterward added to each pint of the liquor, a little spirits also being generally added, before it is set aside to ferment. A larger quantity of sugar is sometimes used, and no water, and a stronger and sweeter C. wine is thus produced. Fermentation requires several weeks, and the wine is not fit for use for at least some months afterward. Black C. wine is made in the same way from black currants, but the fruit is put on the fire in as small a quantity of water as possible, and heated to the boiling-point before it is bruised. C. wine, well made, may challenge comparison with many products of the grape.

CUR'RANTS, a small kind of raisin (*Passulæ minores*), are the dried red or blue berries of a small fruited seedless variety of the common vine, cultivated in the East, especially in Greece. They are very small, round, with a thin skin, without seeds, and very sweet. Those brought from the island of Zante are most esteemed. They are much used by bakers and cooks, entering into the composition of many kinds of cakes, puddings, etc. They are a principal article of export from Greece, and the failure of the crop is severely felt in that country. Currants are simply dried in the sun, on the ground, and then packed into barrels. In a few districts of Greece, a very sweet oily wine, called currant wine, is made from these currants.

CURRATOW, n. *kŭr'ra-tow:* see BROMELIACEÆ.

CURRENCY, n. *kŭr'rĕn-sĭ* [OE. *currant*, running—from OF. *curant*, running—from *curre*, to run: L. *currens* or *curren'tem*, flowing or running—from *currĕrĕ*, to run: It. *corrente*]: a continued course or passing of anything, like the running of a stream; a passing from person to person, or from age to age, as a report; a passing from hand to hand, as money or bills of credit; the whole *circulation* of money, or the whole *quantity* of money of every sort, is called *the currency;* anything in circulation as a medium of trade; general estimation or reception; the rate at which any

thing is valued. CUR'RENT, a, *-rĕnt*, passing from person to person, or from hand to hand; circulating; common; general; generally received; passable; now passing; N. a flowing or passing; a stream; course; continuation; general course or tendency; movement. CUR'RENTLY, ad. *-lĭ*. CUR'RENTNESS, n. circulation; general reception.

CURRENCY is a term frequently used in lieu of money; properly it includes not only money as strictly defined, but other things used currently as media of exchange; it does not necessarily possess the other functions of money. Upon the other hand the term is frequently employed nowadays to designate the paper representative of money; and it has been suggested that confusion would be avoided if, in discussions, this were done universally. Using this meaning of the term, since coin currency is treated under another head, we have first to consider the several forms of representative money.

(1) The kind which represents actual coin on deposit held for the redemption of the paper; hence in its nature a warehouse receipt; to this class belong the gold certificates and silver certificates of the United States and the silver certificates of the Philippine Islands.

(2) The Imperial Treasury notes of Germany (Reichskassenscheine), have also gold in full deposited behind them (120,000,000 marks), but the coin is regarded as a war fund and the notes are not redeemable.

(3) In Australasia the bank-notes have always much more than the full amount of gold behind them, although issues are not limited to coin deposits. In Natal notes are in the same class. In Turkey the notes of the Imperial Ottoman Bank are similarly covered although the requirement is that only 40% need be so covered.

(4) The notes of the Bank of England issued in excess of 18,450,000 are similar, since the law permits the issue only upon actual gold deposited. The amount stated is protected by securities held by the Bank.

(5) The national banks of the United States issue notes entirely secured by bonds, requiring no reserve to be held against them. A similar system exists in Cape Colony in South Africa, and in Egypt, but there the notes are redeemable by the banks in coin as well.

(6) Bank-notes are issued in a number of countries under laws requiring a certain portion to be protected by coin reserves; this obtains in Scotland, Ireland, Germany, Austria-Hungary, Russia, Sweden, Norway, Denmark, Holland, Switzerland, Italy,* Belgium, Roumania, Bulgaria,* Servia,* Japan, Hong Kong, Java, Indo-China, Mexico, Ecuador, Venezuela, Uruguay, Honduras, Costa Rica, San Salvador, Cuba, Philippines.

(7) Other countries permit bank-issues without requiring specific amounts of reserves; but public policy constrains the maintenance of such reserves; thus France, Canada, Algiers

* A very slight discount occcasionally occurs in the issue of these countries.

(8) Bank-notes having inadequate protection in the shape of specie are used in Greece, Portugal, Spain, Chile, Guatemala.

(9) Government notes, in general adequately secured by a specie, are issued by the United States, Italy, British India, Ceylon, the Straits Settlements, Canada, Bulgaria.

(10) Government notes inadequately secured, hence depreciated, exist in Colombia, Brazil, Argentina, Guatemala, Haiti, Nicaragua, Paraguay, Greece.

The world uses approximately $7,500,000,000 of paper; the specie reserves are about $4,500,000,000; leaving say $3,000,000,000 of paper supplementing coin. The increase in production of gold has enaabled banks and governments to protect notes much better than formerly. Peru is the only country of any prominence prohibiting all paper money.

It is obvious that the classes of paper issues 1 to 3 do not, and class 4 does not at present, increase the volume of circulating media; they serve only as a convenience and save the wear and tear of use of coin. The classes 5, 6, 7, and 9, supplement the coin stocks of the several countries materially, thus adding to the 'tools of exchange.' The notes described in classes 8 and 10 practically take the place of specie and their use results in a depreciate, fluctuating standard of values, disturbing all business.

Paper currency is beneficial only if it is redeemable; its influence is greatly increased if it is issued partly upon credit, the marginal amount enabling the people to have a greater or less supply as their needs may require. Excessive issues are however injurious since the ability to redeem is lessened and depreciation is likely to follow. In short, a well regulated paper currency, elastic in volume, but always redeemable, is a blessing; the other kinds are not.

In their nature government notes are not in the long run, as serviceable as bank notes; the volume of issue is usually controlled by statute, instead of being influenced by actual business demands; moreover political exigency too often governs the question of reserves as well as the volume of notes; hence depreciation is more likely. Bank note issues are of course also regulated by law; but the provisions are almost invariably general in character, so that under a properly devised system depreciation is averted, yet the volume of notes may rise and fall as conditions of business demand require. Frequently the amount is regulated by the imposition of a tax upon notes issued in excess of the sum permitted by specie reserve limitations; in such cases banks find it unprofitable to issue notes (by making loans or discounting commercial paper), when interest rates are lower than the tax rate. Where a number of banks have concurrent issuing power the law making redemption in specie imperative operates to restrain excessive issues, each institution being desirous of reaping profit from use of its notes, causes notes of all the others to be paid in coin.

From what has been said it is apparent that the national bank notes of the United States are not strictly bank notes at all; they are not issued upon the credit of the banks; their issue and retirement are not dependent upon the conditions of public need, but upon the question whether the purchase of the bonds required to be deposited with the Government to secure them, can be effected at rates which will make a profit possible. To all purposes there is no redemption feature in the system: the volume is hence frequently excessive and then depreciation in fact is obviated only because the Government is actually behind the notes with its credit. Elasticity of volume is thus out of the question. For elasticity means contraction as well as expansion.

An excessive issue of paper currency almost invariably causes the exportation of gold, thus reducing the volume of actual or reserve money. This result is brought about by a reduction in interest rates, relatively, and arise in commodity prices. A stimulated business activity usually accompanies such an expansion, causing a delusive period of prosperity; hence politicians not infrequently attain popularity by favoring such movements. But the prosperity almost invariably ceases in a short time and reaction takes place.

In recent years the importance of the use of bank-checks as a means of payment has received unusual attention, since it is demonstrated that fully 90 %, and probably somewhat more, of the volume of business in the United States is transacted in this manner. Only in Great Britain, Canada and Australasia, is this also the case in a greater or less degree.

While it is impossible to measure with any degree of accuracy the amount of this *check-currency* or *deposit-currency*, as it is sometimes called, two factors are worth consideration: (1) the volume of bank deposits against which checks may be drawn (thus excluding savings banks' deposits, but including those of trust companies); (2) the volume of checks exchanged at our clearing houses. For purposes of comparison these data are given (for the United States only) for the years 1886, 1896 and 1906, together with the estimated volume of coin and paper in circulation and in banks, and the coin and paper currency in bank reserves.

	1886.	1896.	1906.
Deposits in banks, except savings	$1,803,000,000	$3,009,000,000	$8,916,000,000
Clearing-house exchanges	49,247,000,000	51,246,000,000	159,808,000,000
Coin in circulation and banks	457,000,000	567,000,000	858,000,000
Paper currency in circulation and banks	796,000,000	939,000,000	1,879,000,000
Coin and paper currency in bank reserves	360,000,000	500,000,000	990,000,000
Per cent reserves to deposits	20.	16⅔	11.1

In the United States, generally reserves of specie and paper currency are required to be held against deposits; thus what may be regarded as the potential check-currency supply is brought into relation with the monetary stock; the reserve-requirement being the limitation upon the expansion of the deposits; and since in practice each loan becomes a deposit in our banking practice, there is a check upon the excessive expansion of loans brought about by the reserve-requirement. The reduction in the percentage reserves above indicated is a symptom of danger from over-expansion of credits.

CURRENT, ELECTRIC. See ELECTRICITY, PRINCIPLES OF.

CUR'RENTS: see GULF STREAM: TIDES.

CURRICLE, n. *kŭr'rĭ-kl* [L. *currĭcŭlum*, a career, a course—from *currĕrĕ*, to run: It. *curricolo*, a curricle]: an open carriage with two wheels, drawn by two horses abreast. CURRICULUM, n. *kŭr-rĭk'ū-lŭm*, the whole course of study at a school or university.

CURRIE, *kŭr'rĭ*, JAMES, M.D.: 1756, May 31—1805, Aug. 31; b. Dumfriesshire, Scotland: known for his edition of Burns's works, long the basis of all subsequent editions. He was educated for a mercantile life, but afterward studied medicine at Edinburgh Univ.; and settling in Liverpool, 1781, soon obtained a good practice. His chief medical work was, *Medical Reports on the Effects of Water, Cold and Warm, as a Remedy in Febrile Disease.* His edition of Burns (introduced by a criticism on his writings), which he undertook solely for the benefit of the widow and children of the poet, was published 1800, and realized £1,400.

CURRIED, CURRIER: see under CURRY.

CURRY, v. *kŭr'rĭ* [OF. *couroier;* F. *corroyer*, to dress leather—from *corroi*, prepared skin—from L. *corĭŭm*, a hide: It. *corredare*, to prepare, to rig out: Sp. *conrear*, to dress wool—*lit.*, to dress or prepare materials]: to dress leather after being tanned (see LEATHER); to rub and clean a horse with a comb; to thrash; to chastise. CUR'RYING, imp.: N. the act of dressing skins after they are tanned; the act of rubbing down a horse. CUR'RIED, pp. *-rĭd*. CUR'RIER, n. *-rĭ-ĕr*, a workman who dresses leather. CURRY-COMB, a kind of scraper used for rubbing, cleaning, and dressing horses; it consists of a number of iron plates notched on one edge to form rough teeth. These plates are fastened in parallel lines to an iron back, to which a handle is attached. TO CURRY FAVOR [corruption of OE. *curry favel*—from F. *courvoyer fauvel*, to rub the *fauvel* or horse]: to seek or gain favor by flattery or officious civilities.

CURRY, n. *kŭr'rĭ* [Pers. *khûrdi*, broth, juicy meats]: a highly spiced condiment much used throughout India: a dish flavored with curry: V. to prepare with curry. CURRY-POWDER, or CURRY PASTE, compound of many in-

gredients for making curries. It consists of turmeric and various spices; it is used to a large extent in India and elsewhere as a seasoning for a variety of dishes. One of the best receipts for the compounding of C. P. is, turmeric powder, 6 oz.; coriander seed powder, 8 oz.; black pepper, 4 oz.; fenugreek, 2 oz.; ginger, 2 oz.; cayenne pepper, ½ oz.; cummin seed, ½ oz. Another process is to mix turmeric powder, 5 oz.; coriander seed powder, 3 oz.; black pepper, 1 oz.; ginger, 1 oz.; cayenne pepper, 1 oz.; scorched mustard, 2 oz.; mace, 2 drams. A third variety is obtained from turmeric powder, 8 oz.; coriander seed powder, 4 oz.; black pepper, 1 oz.; cayenne pepper, 1 oz.; scorched mustard, ½ oz.; mace, 1 dram; cinnamon, 1 dram; cardamons, 2 drams.

CURRY, *kŭr'rĭ*, DANIEL, D.D., L.D.D.: 1809, Nov. 26—1887, Aug. 17; b. near Peekskill, N. Y.: Meth. Episc. minister and journalist. He graduated at Wesleyan Univ. 1837, became principal of the Troy Conference Acad. the same year, and prof. in the Ga. Female College 1839; entered the ministry of the Meth. Episc. Church in Ga. 1841, and was pastor in Athens, Columbus, and Savannah till the Slavery question separated the church; then joined the New York conference and preached in New York, Brooklyn, New Haven, and Hartford. He was pres. of Indiana Asbury Univ. 1854–57; editor of the *Christian Advocate* 1864–76; the *National Repository* 1876–80 and the *Methodist Review* from 1884 till his death.

CURRY, JABEZ LAMAR MONROE: an Amer. educator: 1825, June 5—1903, Feb. 12; was a rep. in congress from Ala., 1857–61; served in the civil war; was pres. of Howard Coll., 1866–68; Prof. of English Literature, Philosophy, and of Constitutional and International Law at Richmond Univ., 1868–81; U. S. min. to Spain, 1885–89; gen. agt. of the Peabody and the Slater Educational Funds; and special U. S. Com. at the coronation of Alfonso XIII. of Spain, 1902.

CURSE, v. *kĕrs* [AS. *corsian* or *cursian*, to execrate by the sign of the cross; Sw. *korsa;* Dan. *korse*, to make the sign of the cross—from Dan. and Sw. *kors*, a cross: Icel. *kross*, a cross]: to utter a wish of evil against one; to devote to evil; to imprecate evil upon; to execrate; to utter imprecations; to vex or torment; N. a malediction; a wishing of evil; great vexation or torment. CUR'SING, imp.: N. the uttering of a curse; execration; see INCANTATION: SWEARING. CURSED, pp. *kĕrst* or *kĕr'sĕd:* ADJ. blasted by, or under the influence of, a curse; abominable; detestable; execrated. CUR'SER, n. one who. CUR'SEDLY, ad. *-lĭ.* CUR'SEDNESS, n. CURSED THISTLE, *Carduus arvensis.*—SYN. of 'curse, n.': imprecation; execration; anathema.

CURSE OF SCOTLAND: term applied to the *nine of diamonds* in a pack of playing cards. The origin of the phrase is uncertain. The probable explanation is, that it refers to the detestation entertained in Scotland toward John Dalrymple, first Earl of Stair, on account of his concern in the massacre of Glencoe, and for which he had to resign office, 1695. The heraldic bearing of this person

was 'or, on a saltire azure, nine lozenges of the field;' these nine lozenges resemble the nine of diamonds; hence the popular phrase, the curse of Scotland.

CURSIVE, a. *kėr'sĭv* [F. *cursive*—from mid. L. *cursīva*, a writing, a letter—from L. *cursus*, quick motion, a running: It. *corso*, a running; *corsivo*, cursive]: running, fluent. CUR'SIVELY, ad. *-lĭ*. CURSORY, a. *kėr'sėr-ĭ*, hasty, slight superficial; not with close attention. CUR'SORILY, ad. *-lĭ*, in a hasty superficial manner. CUR'SORINESS, n. CURSIVE-HAND, in *writing*, a running hand. CUR'SITOR, n. *-sĭ-tėr*, the clerk of course; an officer in the court of chancery whose business is to make out original writs. CURSIVE LETTERS, the small letters or characters of a running hand employed in writing MSS. after the 9th c., as distinguished from *uncial* or large (capital) letters used in MSS. before that date. *Cursives*, in Bib. criticism, refer to MSS. in cursive letter, presenting different parts of the New Test.: of Gospels or portions of Gospels alone there are known over 600 Cursives dating from the 9th to the 16th c.; many have great value, though, as a whole, being less ancient than the *Uncials* they rank below them in authority. CURSORARY, a. *kėr'sō-rer-ĭ*, in *OE.*, cursory; hasty; careless—a word hardly legitimate.

CURSOR, n. *kėr'sėr* [L. a runner—from *cursus*, pp. of *curro*, I run]: inferior officer of the papal court; a part of a mathematical instrument which slides on the main portion, as the hand of a barometer, the slide of a Gunter rule, etc.

CURSORES, n. plu. *kėr-sō'rēz* [L. *curro*, I run; *cursor*, a runner]: an order of birds comprising those destitute of the powers of flight, though their wings add speed to their running, as the ostrich, and emu, etc.; named from the adaptation of their legs and feet for running vigorously The dinornis and æpyornis, with other fossil C., were larger than any birds of existing species.

CURSORIA, n. *kėr-sō'rĭ-a* [neut. plu. of *cursorius*, pertaining to a race-course]: sub-order of orthoptera containing those families which have the legs adapted for running, as distinguished from leaping.

CURSO'RIAL, a.: adapted or fitted for running. CURSORIAL ISOPODA, in the system of Milne Edwards, a sub-order or section of crustaceans, order *Isopoda*. There are three families—*Idotheidæ*, *Asellidæ*, and *Oniscidæ*. The wood-louse is a typical example of the cursorial isopods.

CURSORINÆ, n. plu. *kėr-sėr-ī'nē* [L. *cursorius*, and suf. *-inæ*]· sub-family of *Charadriadæ* (Plovers). CURSORIUS, *kėr-sō'rĭ-ŭs* [L.]: genus of *Charadriadæ*, typical of the family *Cursorinæ*. *Cursorius Temminckii*, or *Isabellinus*, is the Black-bellied Courier, or Cream-colored Courser, called by Selby the Cream-colored Swift-foot. It is a bird of creamy brown color, the top of the head and the breast ferruginous, a double collar, the upper white, the lower black, the sides white; length, including the bill, 8 inches, legs, 3 inches. Its native country is Africa.

especially Abyssinia, whence it has occasionally strayed as far as England

CURST, a. *kėrst* [OE. *crus*, wrathful: F. *courroux*, wrath (see CROSS 2)]: ill-tempered; cross-grained; hence CRUSTY, a. *krŭs'tĭ*, ill-tempered.

CURT, a. *kėrt* [L. *curtus;* F. *court*, short, little]: short; abrupt; brief and ill-natured; snappish. CURT'LY, ad. *-lĭ*. CURT'NESS, n. shortness.

CURT: in *letter-writing and commercial correspondence*, a common contraction of CURRENT, used to designate this month, that is, the month in which the letter is written, as 15th *curt*. INSTANT, *ĭn'stănt*, and its contr. INST. [L. *instans*, present]: denoting a day of the present or current month, as 10th *inst*. PROXIMO, *prŏks'ĭ-mō*, or its contr. PROX. [L. *proxĭmo*, on the next]: denoting a day of the next month, as, on the 4th *prox* ULTIMO, *ŭl'tĭ-mō*, or its contr. ULT. [L. *ultĭmo*, in the last]: denoting a day in the last month, or the month preceding the present, as, on the 6th *ult*.

CURTAIL, v. *kėr-tāl'* [F. *court*, short, concise; *tailler*, to cut]: to shorten; to cut off the end, or a part; to abridge or diminish. CURTAIL'ING, imp. CUR'TAILED', pp. *-tāld'*: ADJ. cut shorter; abridged. CURTAIL'MENT, n. a shortening of anything. CURTAIL'ER, n. one who. CUR'TAIL-DOG, a dog mutilated according to the forest laws to prevent him running down the royal game. CUR'TAIL-STEP, the lowest step in a flight of stairs, ending at its outer extremity in a scroll. CURTAIL-FRIAR, a tonsured friar, in reference to the cut or circular-shaven patch on the crown of the head. —SYN. of 'curtail': to abbreviate; contract; diminish. *Note.*—Skeat says, CURTAIL is from OE. *curtall* or *curtal*, having a docked tail—from OF. *courtault*, a curtal or docked tail: It. *cortaldo*, a horse without a tail.

CURTAIN, n. *kėr'tĭn* [F. *courtine*—from mid. L. *cortīna*, a wall between two bastions, a small inclosed yard: It. *cortina*, the hangings of a court: Wal. *cortu*, a tent]: a movable cloth hung round a bed, at a window, or in front of the stage at a theatre; any piece of movable drapery used for concealment or ornament; the part of a wall or rampart which joins the flanks of two bastions together: V. to inclose by means of curtains. CUR'TAINING, imp. CUR'TAINED, pp. *-tĭnd*. CUR'TAINLESS, a. TO DRAW THE CURTAIN, to close a curtain so as to shut out the light or conceal an object. TO RAISE THE CURTAIN, to commence. TO DROP THE CURTAIN, to close the scene; to throw off the mask; to end. BEHIND THE CURTAIN, in concealment; in secret. CURTAIN LECTURES, the querulous and discontented talk of a wife to her husband while in bed with him.

CUR'TAIN, in Fortification: portion of rampart or wall between two bastions or two gates. In a regular siege, to batter down the C. is one of the main undertakings; and many of the external works constructed by the defenders are intended to frustrate, or at least embarrass, this operation.

CURTAL, n. *kèr'tăl* [see CURTAIL and note]: in *OE.*, a docked tail: ADJ. having a docked tail; brief; abridged.

CURTATE, a. *kér'tāt* [L. *curtātus*, shortened, diminished]: in *astron.*, applied to denote a planet's distance from the sun, reduced to the plane of the ecliptic.

CURTICONE, n. *kér'tĭ-kōn* [L. *curtus*, docked; Eng. *cone*]: the lower frustum of a cone; a truncated cone (q.v.).

CURTILAGE, n. *kér'tĭ-lāj* [OF. *courtilage*—from *courtil*, a courtyard—from mid. L. *curtem*, a courtyard—from *cohortem*, a yard, a farm (see COURT)]: a house with its stables and farm-buildings surrounded by a piece of ground, the whole being included within the same fence; a house and homestead.

CURTIN, ANDREW GREGG, American politician: b. Bellefonte, Pa., 1815, April 22; d. there 1894, Oct. 7. He studied law at Dickinson College, and was admitted to the bar in 1839. Entering politics, he became secretary of the commonwealth of Pennsylvania in 1854, governor in 1860, and again in 1863, being one of the most noted 'war governors' of the Civil War period. In 1869 he was appointed minister to Russia. In 1873, he left the Republican party, and from 1881 to 1887 sat in Congress as a Democrat.

CURTIN, JEREMIAH, American linguist and antiquarian: b. Milwaukee, Wis., 1838; d. Burlington, Vt., 1906, Dec. 14. He wrote *Myths and Folklore of Ireland; Tales of the Fairies and the Ghost World; Myths and Folk-Tales of the Russians, Western Slavs, and Magyars; Hero Tales of Ireland;* etc. He translated much from Russian and Polish, and was widely known by his translations from the latter language of the novels of Sienkiewicz.

CURTIS, ALFRED ALLEN, American Roman Catholic prelate: b. Somerset county, Md., 1831, July 4. When only 21 years old he was ordained in the Episcopal ministry and for several years labored on Eastern Shore and later in Baltimore, and Western Maryland, finally returning to Baltimore. Later he resigned his ministerial duties, entered the Catholic Church, took a theological course of two and a half years, was ordained priest by Archbishop Bayley 1874, Dec. 17, and stationed at Baltimore Cathedral till 1886, Nov. 14, when he was consecrated Bishop of Wilmington, Delaware. He resigned the bishopric 1896, Jan. 23, and in 1898 was appointed vicar-general of Baltimore.

CURTIS, BENJAMIN ROBBINS, American jurist: b. Watertown, Mass., 1809, Nov. 4; d. Newport, R. I., 1874, Sept. 15. He was graduated at Harvard 1829, was admitted to the bar 1832, and rose rapidly to the height of his profession in Boston, Mass. He was appointed to the United States Supreme Court 1851, and in the famous Dred Scott case made a powerful argument dissenting from the court's decision. Resigning in 1857 he was a member of the State legislature for two years; and in 1868 one of the counsel for the defense in the impeachment

trial of Andrew Johnson. His writings include: *Reports of Cases in the Circuit Courts of the United States* (1854); *Decisions of the Supreme Court of the United States, with notes and a digest; Jurisdiction, Practice, and Peculiar Jurisdiction of the Courts of the United States* (1880). Consult *Memoir and Writings* (1880).

CURTIS, Edward, American medical scientist: b. Providence, R. I., 1838, June 4. He is a brother of G. W. Curtis (q.v.). He was graduated at Harvard in 1859, and took his medical degree at the University of Pennsylvania in 1864. He was an army surgeon during the Civil War and since 1866 has been a member of the faculty of the College of Physicians and Surgeons in New York. He has made a specialty of microscopic study and the camera in connection with diagnosis, and has published a *Manual of General Medicinal Technology* (1883); *Months and Moods; A Fifteen Year Calendar* (1903); etc.

CURTIS, George Ticknor: jurist and author: b. Watertown, Mass., 1812, Nov. 28; d. New York, 1894, March 28; brother of Benjamin R. Curtis of the U. S. supreme court, who was one of the two that dissented from the Dred Scott decision. Curtis was admitted to practice law 1836, became U. S. commissioner in Boston, returned to slavery the fugitive Thomas Sims, was for several years in the Mass. legislature, and removed to New York 1862. He has published digests of *Eng. and Amer. Admiralty Decisions* (1839) and of *Decisions of the Courts of Common Law and Admiralty in the United States* (1840–46); *Rights and Duties of Merchant Seamen* (1841); *Amer. Conveyancer* (1846); *Law of Copyright* (1847); *Law of Patents* (1849 and 73); *Equity Precedents* (1850); *Inventor's' Manual; Commentaries on the Jurisprudence, Practice and Jurisd. of the Courts of the United States* (1854–58); *History of the Origin, Formation, and Adoption of the Constitution of the United States* (2 vols. 1855–58); *Life of Daniel Webster* (1870); *Life of James Buchanan* (1883); *McClellan's Last Service to the Republic;* and *Creation or Evolution* (1887).

CUR'TIS, George William: American author: 1824, Feb. 24—1892, Aug. 31; b. Providence, R. I. He received a common-school education at Jamaica Plains, Mass.; was a member, 1842–3, of the Brook-Farm Assoc. at W. Roxbury, Mass.; a farmer in Concord, Mass.; and, 1846, travelled in Europe, Syria, and Egypt; returning 1850, and taking an editorial position on the *Tribune*. From 1852 he was one of the editors of *Putnam's Monthly*, finally sinking a fortune in it; but nobly persevered in the work of paying off all the creditors. He edited the 'Easy Chair of *Harper's Magazine* 1853–92, and from 1857 onward he was the chief editorial contributor to *Harper's Weekly*. In the lecture era he was a favorite throughout the country. He was unsurpassed in the music and grace of speech, as of writing, and in literary culture. For more than 30 years he was prominent as speaker and writer

in the higher politics, and more or less independent of party. In 1860, 64, and 76, he was a member of the national repub. convention; 1867 of the constitutional convention of N. Y., and chairman of the committee on education; 1868 presidential elector. He declined a consul-generalship to Egypt, a nomination as sec. of state of N. Y., and several important foreign missions. He was appointed by Pres. Grant, a commissioner on rules of the civil service, and thenceforth was an advocate of that reform. In 1884 he opposed the repub. nomination of Blaine for the presidency, and became a supporter of Cleveland. He was (1864–92) one of the regents of the Univ. of the State of N. Y.; 1886 was elected vice-chancellor, and later chancellor. His published books are: *Nile Notes of a Howadji* (1851); *The Howadji in Syria* (1852); *Lotus-Eating* (1852), letters from summer resorts; *Potiphar Papers* (1853); and *Prue and I* (1856), the latter picturing the life of a clerk and wife; and *Trumps* (1862), a novel.

CURTIS, Mattoon Monroe, American educator: b. Rome, N. Y., 1858, Oct. 19. He was graduated at Hamilton College, N. Y., 1880, and from the Union Theological Seminary 1883. He was pastor of a Presbyterian church at Cleveland, Ohio, 1885–8, and in 1891 was elected Handy professor of philosophy in the Western Reserve University. He has published: *Locke's Ethics; Philosophy and Physical Science; Philosophy in America;* etc.

CURTIS, Samuel Ryan: 1805, Feb. 3—1866, Dec. 26; b. near Champlain, N. Y.: military officer; he graduated at the U. S. Milit. Acad. 1831, resigned the next year; followed civil engineering 1836–41, and the practice of law 1841–46; was appointed adjt.gen. of Ohio 1846, raised the quota of vols. for the Mexican war, took the field as col. 2d regt., held Camargo against heavy odds, opened Gen. Taylor's communications, and was gov. of Saltillo 1847–8. He practiced engineering 1847–55, and law 1855–61; was member of congress from Io. 1857–61; volunteered for the relief of Washington 1861, became maj.gen. of vols. 1862, Mar. 21; served to the close of the war, chiefly in the w.; was commander of the dept. of the n.w. 1865, commissioner to negotiate Indian treaties 1865, and to examine the Union Pacific railroad 1865–6, and was mustered out of the vol. service 1866, Apr. 30.

CURTIS, William Eleroy, American journalist: b. Akron, Ohio, 1850, Nov. 5 He has written: *Children of the Sun* (1882); *Capitals of Spanish America* (1888); *The Land of the Nihilist* (1888); *Japan Sketches; Venezuela* (1891); *Life of Zachariah Chandler; The Yankees of the East* (1896); *To-day in France and Germany* (1897); *Between the Andes and the Ocean* (1900); *The True Thomas Jefferson* (1901); *The Turk and his Last Provinces* (1902); *Denmark, Sweden and Norway* (1903); *The True Abraham Lincoln* (1903); *To-day in Syria and Palestine* (1904); *Modern India* (1905); etc. He was director of the Bureau of American Republics 1890–3, and chief of the Latin-

American department and historical section of the World's Columbian Exposition 1891–3.

CURTISS, Samuel Ives, American Congregational clergyman: b. Union, Conn., 1844, Feb. 5 d. London, Eng. 1904. He was graduated at Amherst College 1867, and the Union Theological Seminary 1870; and was pastor of the American chapel in Leipsic 1874–8. In 1878 he was appointed professor of biblical literature in Chicago Theological Seminary, but changed later to the chair of Old Testament literature and interpretation. His publications include: A translation of Bickell's *Outlines of Hebrew Grammar* (1877); *The Levitical Priests* (1877); translations of Delitzsch's *Messianic Prophecies* (1880; 1891); and of his *Old Testament History of Redemption* (1881); *Franz Delitzsch* (1890); *Ezekiel and His Times* (in *The Bible as Literature* (1896); etc.

CURTIUS, *kôr'tse-ûs*, Ernest: a distinguished German philologist and antiquary: b. 1814, Sep. 2, at Lübeck. After a good preliminary education at the High School of that place, he attended several German universities (Bonn, Göttingen, and Berlin) as a student of philology. In further pursuance of the investigation of Greek antiquity he went (1837), in company with Professor Brandis, to Athens, where he stayed several years. In 1840, Curtius returned to Germany, visiting many places in Italy by the way. He graduated in Halle, and after he had taught for some time at two Berlin gymnasiums, he received an extraordinary professorship of the univ. at that place. His *Anecdota Delphica Inscriptiones Atticæ Duodecim* and *The Akropolis of Athens* were published about this time. In 1844, he became tutor to the crown-prince of Prussia. Six years later, he returned to his academical office; in 1856, he was called to Göttingen; and in 1863, he was made ordinary prof. at Berlin, and permanent sec. of the Acad of Sciences. In 1874, he was sent by the German govt. to negotiate a treaty with the Greeks, to permit its undertaking the important excavations at Olympia, begun 1875. His principal works are *Peloponnesos* (1852), a description of the country of Greece, with reference to its traditions, history, and monuments; *Attic Studies* (1864); and a *History of Greece*, translated into English by A. W. Ward (1868–76).

CURTIUS, Georg: b. Lübeck, 1820, April 16; d. 1885, Aug. 12: brother of Ernest Curtius: distinguished classical scholar. He studied at Berlin and Bonn. After short periods at Berlin, Prague and Kiel universities, he accepted (1862) the professorship of classical philology at Leipzig. Of his published works are to be noted *De Nominum Græcorum Formatione* (Berl. 1842); *Die Sprachvergleichung in ihrem Verhältniss zur Classischen Philologie* (Dresd. 1845); *Sprachvergleichende Beiträge zur Gr. und Lat. Gram.* (Berl. 1846); *De Nomine Homeri* (Kiel 1855). His *Griech. Schulgrammatik* (11th ed., 1875) is in high repute, and his *Grundzüge der Griech. Etymologie*

(Leipzig 1862) is a most valuable contribution to that department of philology (Eng. trans., 1878). He d. in 1885.

CURTIUS, *ker-she-us*, METTUS, or METIUS: noble Roman youth who (according to tradition) heroically sacrificed his life for the welfare of his country, B.C. 362. A chasm, it is said, had opened in the Forum, and the soothsayers predicted that some great calamity would happen if there were not thrown into it the best wealth of the state. While it was proposed to consult the oracles, and determine what this best wealth could be, Curtius appeared on horseback and in full armor, and exclaimed: 'Rome has no greater riches than courage and arms.' He then rode into the chasm, which immediately closed over him.

CURTIUS, RUFUS QUINTUS: Roman historian, author of *De Rebus Gestis Alexandri Magni*, in ten books, of which the first two have been lost, and the text of the remainder has come down to us in a damaged condition. Great differences of opinion have existed with regard to the time in which Curtius wrote, for his name is first mentioned by writers after the 12th c. Some critics have supposed that Curtius lived in the reign of Augustus; others, that he wrote in the 2d c. or under Constantine or Theodosius; while some regard the work ascribed to Curtius as a composition of the 13th c. The most probable opinion is that he lived in the time of Vespasian. The value of the work is as dubious as its authorship. Curtius had very inaccurate knowledge of geography, chronology, military tactics, astronomy, and historic criticism; hence his work is far from being trustworthy as a whole. The style, though declamatory, is on the whole pure and elegant. The first edition of his history was published at Venice about 1471. Among modern editions are Mützell's (Berlin 1841) and Zumpt's (Brunswick 1849).

CURTLE AX, n. *kėr'tl-ăks* [F. *coutelas*, a short sword; prov. It. *cortelo*, a knife (see CUTLASS)]: in *OE.*, a form of sword now called a 'cutlass': also spelled in *OE.*, COUTEL-HACHE, COUTEL-AXE, COURTELAS, CURTAL-AXE, and CUTLE-LAS.

CURTSEY, n. *kėrt'sĭ*, CURT'SEYS, plu. *-ĭz*—or CURTSY, n. *kėrt'sĭ*, CURT'SIES, plu. *-sĭz* [F. *courtiser*, to court, to entertain with compliments of respect (see COURTESY)]: a woman's or girl's act of reverence or respect; a woman's salutation of respect by slightly bending the knees and inclining the body forward. CURT'SEYING or CURT'SYING, imp. *-sĭ-ĭng*. CURT'SEYED or CURT'SIED, pp. *-sĭd*.

CURUCUI, n. [Braz.]: South American bird, *Trogon Curucui*.

CUR'UKU OIL, or BRAHMADUN'DU OIL: pale yellow, limpid oil, obtained in large quantities in India from the seeds of the *Argemone* (q.v.) *Mexicana*, or Prickly Poppy, a plant accidentally introduced, but which now flourishes luxuriantly in all parts of India. It is used for lamps, and for other purposes, but is unfit for food.

CURULE, a. *kū'rûl* [L. *curūlis*, pertaining to a chariot, a curule chair: It. and F. *curuel*—from L. *currus*, a chariot]: pertaining to the chair or seat used in Rome by public officers of the highest grades, such as consuls, prætors, etc.; thronelike; senatorial; magisterial.

CURVATURE, in Geometry: the deviation of a curve from a straight path, the rate at which its direction changes from point to point. The *total* C. of a plane curve between two of its points P and Q is the exterior angle between the tangents at P and Q, this being the angle through which the tangent turns as its point of contact moves from P to Q. The *mean* C. is the total C. divided by the length of the arc PQ. The limiting value toward which the mean C. tends when Q is taken closer and closer to P is called the C. *at* P.

In the case of a circle, of radius r, the angle between the tangents at P and Q is equal to the angle θ between the radii at P and Q, and the length of the arc PQ is $s = r\theta$. The mean C. is therefore $\theta \div r\theta$ or $1/r$, and this is also the C. at any point P. The C. of a circle is therefore constant at all its points, as must be the case since the circle is perfectly symmetric around its center. In different circles the C. is inversely as the radius, i.e., the larger the circle, the smaller the C. As the radius increases indefinitely the circle tends toward a straight line and its C. approaches 0.

If the angles which the tangents at two neighboring points P and Q of any plane curve make with the axis of X are denoted by φ and $\varphi + \Delta\varphi$, and the arc PQ by Δs, the mean C. from P to Q is $\Delta\varphi/\Delta s$, and the C. at P is in the notation of the Calculus, $d\varphi/ds$. Expressed in terms of the rectangular coordinates x and y, this is found to be equal to $d^2y/d\|x^2 \div (1 + dy^2/d\|x^2)^{\frac{3}{2}}$, which can be computed for any curve as soon as its equation is given.

Among the circles tangent to a given curve at a point P there is always one which has the same C. that the curve has at P. This is the circle whose radius is the reciprocal $ds/d\varphi$ of the curvature. It is called the circle of C. or *osculating* circle; its radius is the *radius of C.*, and its center the *center of C.* for the point P. The locus of the center of C. as P moves on the curve is called the *evolute* of the curve. The circle of C. not only touches, but also crosses the curve at P; it has the closest contact with the curve that any circle can have.

The radius of C. is commonly employed in mathematics rather than the C. itself. From the formula above, its value is $\rho = (1 + dy^2/d\|x^2)^{\frac{3}{2}} \div d^2y/d\|x^2$. It plays a very important part in mechanics. For example, the centrifugal force of a mass m moving with velocity v along a curve is mv^2/ρ.

A curve which does not lie in a plane is called a twisted, or tortuous, curve. The angle between the tangents at two points P and Q involves two elements: its absolute

amount and its direction in space. Of the planes through the tangent at P there is one, called the *osculating* plane, which contains the next succeeding tangent. The curve bends in this plane and at the same time bends out of the plane. Curves in space are therefore also called curves of double curvature. See CONTACT, EVOLUTE, and OSCULATION.

CURVE, n. *kėrv* [L. *curvus*, bent: F. *courbe:* It. *curvo*]: anything bent without angles or corners; part of a circle; an arched line; a line whose direction is constantly changing: ADJ. crooked; bent: V. to bend; to crook; to make circular. CUR'VING, imp. CURVED, pp. *kėrvd:* ADJ. crooked. CURVA'TION, n. *-vā'shŭn*, the act of bending. CUR'VATIVE, a. *-vă-tĭv*, in *bot.*, scarcely folded; having the margins merely curved a little. CUR'VATURE, n. *-vă-tūr*, crookedness, or the manner of being bent; a curve; a bending from a straight line; the amount of change of direction in a curve. CUR'VATED, a. *-vă-tĕd*, curved; bent in a regular form.—SYN. of 'curved': bent; awry; inflected.

CURVE: (Lat. *curvus*, 'bent'), in geometry, a line. We consider first a plane curve, that is, one whose points all lie in the same plane. A curve may be defined geometrically or kinematically. Geometrically a curve is the locus of all the points which satisfy a given condition. Kinematically a curve is the locus of a point which moves subject to a given condition. For example, the circle, the simplest and first curve to be studied, is the locus of all the points at a given distance from a fixed centre; or, it is the locus of a point which moves so as to be always at a given distance from a fixed centre.

Historically the conic sections came next after the circle. These curves were invented by Plato (430–347 B. C.), and were defined and studied as plane sections of a right circular cone. Later mathematicians, however, about the time of Newton, gave them a better definition, viz., a conic section (or a 'conic', as we now say) is the locus of a point such that its distance from a fixed point, the focus, is in a given ratio to its distance from a fixed line, the directrix; or, it is the locus of a point which moves so as always to satisfy this condition. The Greeks invented other curves also; especially the Conchoid (which is the locus of a point such that its distance from a given straight line, measured along the line drawn through it to a fixed point, is constant), and the Cissoid. These two curves were invented for the purpose of trisecting an angle, and for finding the edge of a cube whose volume is twice the volume of a given cube.

Obviously there is no limit to the number of such geometrical, or kinematical definitions. A piece of paper sticking to the rim of a cartwheel describes a curve called a Cycloid. Every moving point in any kind of machine describes a curve. Of course, every curve thus arbitrarily defined has its own peculiar properties; but this method of definition does not furnish any principle of classification.

CURVE.

The principle under which curves are now classified was first presented by Descartes in 1637. He introduced the principle of representing any curve whatever by an equation between the co-ordinates, x and y, of any point on the curve. (See Coordinates, and Geometry.) According to Descartes' method any equation whatever between x and y determines a curve, and conversely any curve whatever is determined by an equation between x and y. Under this principle we have two general classes of curves. An algebraic curve is one whose equation can be written in the form of a rational and integral function of x and y, as $y^2=4ax$. All others are called transcendental curves, e.g., $y=a^x$, $x=\log y$, $y=\sin x$, are transcendental curves.

Furthermore, algebraic curves are classified according to their order; that is, such a curve is said to be of the first, second, or third order, according as its equation is of the first, second, or third degree in x and y. E.g., $2x+3y=5$ is a curve of the first order, while $xy=1$ and $x^2xy^2=r^2$ are curves of the second order.

According to this method of definition, a straight line is a curve of the first order, and conversely every curve of the first order is a straight line. A conic is a curve of the second order, and conversely every curve of the second order is a conic. Curves of the third order are called cubics; those of the fourth order quartics, and so on.

Plücker was the first to give (about 1845) a scientific dual definition of a curve, viz., 'a curve is a locus generated by a point, and enveloped by a line,—the point moving continuously along the line, while the line rotates continuously about the point.' The moving point is a point on the curve, and the line is a tangent to the curve.

Curves whose points do not all lie in the same plane are called 'twisted curves,' or 'curves of double curvature.' Following Plücker's definition a twisted curve may be defined as 'the locus of a point moving along a line, which at the same time rotates about the point in a plane, while this plane at the same time rotates about the line.' The generating point is a point on the curve, the line is a tangent to the curve, and the plane is called an 'osculating plane.' The so-called spiral spring in the common spring scales, and the sharp edge of the thread on a common iron bolt are familiar examples of twisted curves. The so-called spiral spring is properly called a 'helix.' A spiral is a plane curve, one familiar example of which is found in the hair spring of a watch.

The number of curves that might be drawn is of course infinite. A large number have received names, and are objects of great interest to the mathematician—in some cases, for their beauty, in others for their remarkable properties. Among the most interesting are the following: 1, circle; 2, ellipse; 3, hyperbola; 4, parabola; 5, cissoid of Diocles; 6, conchoid of Nicomedes; 7, lemniscata; 8, cycloid; 9, harmonic curve; 10, trochoid; 11, the witch; 12, cardioid: 13, curves of circular functions—e.g., curve of

sines; 14, the logarithmic curve; 15, the spiral of Archimedes; 16, the catenary; 17, the tractory; 18, the tractrix; 19, the ovals of Cassini; 20, the reciprocal spiral.

CURVEMBRYEÆ, n. plu. *kėrv-ĕm-brī′ē-ē* [L. *curvus*, curved; mod. L. *embryo*—from Gr. *embruon*]: in *bot.*, the second of two sub-orders of *Solanaceæ*, in the classification of that order proposed by Mr. Miers. The first is the *Rectembryeæ*, in which the embryo is straight; in the second, *Curvembryeæ*, as the name imports, it is curved.

CURVES, Anticlinal and Synclinal: terms applied to the elevations or depressions in undulating strata. The ridge-wave is called the anticlinal curve, and the top of the ridge is known as the anticlinal axis; while the trough is the synclinal curve, and the bottom of the trough the syclinal axis.

CURVET, n. *kėr′vĕt* [It. *corvetta*, a curvet, a leap: F. *courbette*, curvet—from F. *courbe*, a curve—from L. *curvus*, bent]: the prancings of a managed horse, in which he bends his body together and springs out: V. to leap in curvets; to frisk; to leap and bound. Cur′veting, imp. Cur′veted, pp.

CURVICAUDATE, a. *kėr′vĭ-kaw′dāt* [L. *curvus*, bent; *cauda*, a tail]: having a bent tail. Cur′vifo′liate, a. *-fō′lĭ-āt* [L. *fŏlĭum*, a leaf]: having bent leaves. Cur′viform, a. *vĭ-fawrm* [L. *forma*, a shape]: being of a curved form.

CURVILINEAR, a. *kėr′vĭ-lĭn′ĭ-ėr* [L. *curvus*, bent; *linĕă*, a line]: having a curve line; consisting of curve lines. Cur′vilin′ear′ity, n. *-ăr′ĭ-tĭ*, the state of being described or bounded by curved lines. Curvilinead, n. *-ĭ-ăd*, drafting-instrument used in describing irregular curves. The various shapes of its marginal outline enable it to be fitted into position, so as to project or transcribe the curve required. Mr. Desalier, of Paris, invented a machine for generating the curves and marking out the patterns. It is capable of marking 1,200 varieties of curves. Curvograph, n. *kėr′vo-graf* [Gr. *grapho*, I write, I describe]: instrument for drawing a curve without reference to the center. It is usually an elastic strip, adjustable to a given curve, and serves to transfer the latter to another plat or another place on the plat: see Arcograph and Cyclograph. Cur′viros′tral, a. *-rŏs′trăl* [L. *rostrum*, a beak]: having a crooked beak.

CURVISERIAL, a. *kėr′vĭ-sē′rĭ-ăl* [L. *curvus*, crooked; *serĭēs*, a row]: in the arrangement of leaves on an axis or stem, applied to those leaves which are believed to be disposed on an infinite curve, as distinguished from *rectiserial* ones.

CURZOLA, *kôrd-zō′lâ* (anc. *Corcyra Nigra*, so called from the sombre color of its pine forests): island of the Adriatic, part of the Austrian crown-land of Dalmatia; lat. 42° 57′ n., long. 17° e.; length about 25 m., average breadth 4 miles. It is well covered with wood, which on the s.

coast grows down to the water-edge. The woods furnish ship-timber, considerable wine is produced, and the fisheries of the coast are productive. The town of Curzola (pop. abt. 2,000) is at the n.e. extremity of the island. Pop. of island abt. 22,000.

CURZON, Lord, George Nathaniel: English statesman; b. Kedleston, England 1859, Jan. 11; educated at Balliol Coll., Oxford, and at Eton; assist. priv. sec. to Marquis of Salisbury 1885; under-sec. of State for India 1891–2, and of Foreign Affairs 1895–8; became viceroy and gov.-gen. of India in the latter year. In 1895 married Mary Victoria Leiter, dau. of Levi Z. Leiter, Chicago, Ill. When appointed viceroy of India in 1898 he was raised to the peerage as Baron Curzon of Kedleston. His tenure of office was marked by tireless industry to improve and modernize all branches of the govt. for the needs of the vast country, and while the first viceroy to leave India without giving up his office, he was also the first to receive reappointment after completing a term of 5 years. Under his auspices occurred the great durbar held at Delhi (1902–03) proclaiming King Edward emperor of India; also the expedition (1903–04) into Tibet, and the treaty signed at Lhassa. His project to partition Bengal, however, met with great opposition, and was looked upon as an embodiment of autocratic government. On the other hand, when as the champion of constitutional govt. he consistently opposed complete control of the Indian army being placed in the hands of the commander-in-chief, Lord Kitchener (q.v.), instead of its remaining divided between the viceroy and the military member of the Indian council, serious differences arose, and when the British government supported his opponent's plans, Curzon resigned in 1905, Aug. 12, being succeeded by Lord Minto (q.v.). Among Curzon's published writings are *Russia in Central Asia in* 1889, *and the Anglo-Russian Question* (1889); *Persia and the Persian Question* (1892); *Problems of the Far East: Japan-Corea-China* (1894).

CUSA, *koo'sa*, or Cusanus Nikolaus (originally Nikolas Chrypffs, or Krebs), German ecclesiastic: b. Kues, near Treves, 1401; d. Todi, Umbria, Italy, 1464, Aug. 11. As archdeacon of Liège he took the anti-papal side at the Council in Basel; but was ultimately bishop of Brixen in Tyrol, cardinal, and papal legate to Constantinople. He exposed the false Isidorian decretals, denounced perverted scholasticism in *De Docta Ignorantia*, taught that the earth went round the sun, and in his pantheistic tendencies was a precursor of Giordano Bruno.

CUSACK, Mary Frances: Irish writer; better known as the Nun of Kenmare: b. Dublin 1820, May 6; d. 1899, June 7. Originally a Protestant she became a Roman Catholic, and joined the Poor Clares, one of the sisterhoods of Saint Francis, and for 23 years conducted a convent of the order at Kenmare. When in 1884 she established the Sisters of Peace, an order similar to the Poor Clares, but with a wider range, not only did Leo XIII. sanction

the work, but she received the hearty support of Christians, both Catholic and Protestant. She visited the United States in 1886. Among her many published books are: *Student's History of Ireland; Woman's Work in Modern Society; The Pilgrim's Way to Heaven; Jesus and Jerusalem; Lives of Saint Patrick; Daniel O'Connell*, etc.

CUSCATLAN, Salvador: a department bounded on the north by the departments of Chalatenango and Cabañas, on the east by the same departments and San Vicente; on the south by San Vicente and La Paz, and on the west by the department of San Salvador. The greater part of its surface is covered by lofty mountain ranges separated by narrow valleys; toward the north and northeast, however, near the Cuezalapa and Lempa rivers, there are comparatively level districts. There are 17 towns in the department, the more important being Suchitoto, San Pedro, Perulapán, Tenancingo, San Rafael, and Guayabal. Pop. (1901) 72,000.

CUSCO-BARK, n. *kŭs'ko-* [from *Cuzco*, in lower Peru, whence the bark]: a kind of Cinchona bark, exported from Arequipa, used in the cold stage of intermittent fevers and in low typhoid states of the system.

CUS'CUS: see LEMON GRASS.

CUSCUTA'CEÆ: see DODDER.

CUSH, *kŭsh:* name given in the Old Testament to the oldest son of Ham, to the peoples descended from him, and to the countries inhabited by them. Of his sons, Seba dwelt in Africa, bordering on Egypt; Havilah, in Arabia and adjoining parts of Africa; Sabta, in Arabia Felix; Raahmah, along the Persian Gulf; Nimrod (who is noted in Scripture as the first man who became conspicuous in the chase and in war) built Babylon and Nineveh, and founded the empire of Assyria. It is evident, therefore, that when the Cushites and the land of Cush are spoken of, a wide diffusion of people and a consequent large extent of territory are implied.

Modern research into the ancient languages of the East has furnished unexpected confirmatory proof that an ethnical relation existed between the African Cushites (or Ethiopians) and the original inhabitants of Babylonia.

CUSHAT, n. *kush'ăt* [AS. *cusceote*]: the ring-dove or wood-pigeon: see PIGEON.

CUSHEW, n. *kŭsh'ū* [a native American word (?)]: large bird, *Ourax pauxi*, of the family *Cracidæ*, or Curassows, and itself sometimes called the Galeated Curassow. The bill is bright red, surmounted by a protuberance of livid slate color. The feathers of the head and neck are of a rich black color and velvety texture; the greater part of the body brilliant black, with green reflections; the abdomen and under tail coverts white; legs red, claws yellow. This bird, which is about the size of a hen turkey, is a native of Mexico, Brazil, and Guiana. It is gregarious and builds its nest on the ground.

CUSHING, *kûsh'ing*, CALEB, LL.D.: 1800, Jan. 17—1879, Jan. 2; b. Salisbury Mass.: statesman. He graduated at Harvard Univ. 1817, studied law and began to practice in Newburyport, Mass., was elected member of the legislature 1825, and of the senate 1826, spent two years in European travel, was again elected to the legislature 1833 and was chosen member of congress as a whig 1834. He served four consecutive terms, joined the democratic party 1841, was nominated for sec of the treasury and rejected by the senate 1843, was then appointed U. S. commissioner to China, and negotiated the first treaty between that country and the United States. At the outbreak of the Mexican war he raised a Mass. regt. at his own expense, accompanied it as col. and was promoted brig.gen. He served a third term in the legislature 1850–52, was appointed a justice of the Mass. supreme court 1852, was U. S. atty. gen. 1853–57, and was again in the legislature 1857–60 In 1860, Apr., he presided over the democratic national convention in Charleston, but withdrew with other delegates and held another convention in Baltimore; was appointed one of three commissioners to codify the laws of congress 1866, was one of the American counsel before the Geneva conference 1872, was nominated for chief-justice of the United States, but the nomination was withdrawn 1873, and was U. S. minister to Spain 1873, Dec.—1877, Jan. 6.

CUSHING, LUTHER STEARNS: 1803, June 22—1856, June 22; b. Lunenburg, Mass.: lawyer. He graduated at Harvard law school 1826, and became associate editor of *The American Jurist and Law Magazine*, clerk of the Mass. house of representatives, lecturer on Roman law in Harvard law school, judge of the common pleas court, Boston, and reporter of decisions of the state supreme court. He was author of *Manual of Parliamentary Practice* (1844), *Introduction to the Study of Roman Civil Law* (1854), *Lex Parliamentaria Americana* (1856), and a number of technical works, including *Treatise on Trustee Process* (1837) and *Treatise on Remedial Law* (1837), and translated Sarigny's *Recht des Besitzes* (1838), Pothier's *De La Vente* (1839), Mattermaier's *Effect of Drunkenness on Criminal Responsibility* (1841), and Domat's *Les lois civiles dans leur ordre naturel* (1850).

CUSHING, THOMAS, LL.D.: 1725-1788; b. Boston: statesman. He was elected to the Mass. assembly 1766, May, became speaker on its organization, and held the office till 1774; opposed the formation of committees of correspondence 1772; was elected to the first continental congress 1774, and the second 1775; was a member of the council of the new govt. of Mass. 1775; opposed the declaration of independence and was defeated for the third congress 1776; was elected lieut.gov. of Mass. 1783; and member of the convention that ratified the federal constitution 1788. He was among those whom Gen. Gates was instructed to send to England to be tried for treason, and was successful in obtaining secret information of British movements.

CUSHION, n. *kûsh'ŭn* [F. *coussin*—from mid. L. *culcĭtinum*, a little mattress—from L. *culcĭta*, a cushion: It.

coscino; Ger. *küszen,* a cushion]: a soft pad or pillow to sit on; any bag filled with soft materials; any stuffed or padded surface; the padded side or edge of a billiard-table: V. to furnish with a cushion or cushions. CUSH'IONING, imp. CUSH IONED, pp. *-ŭnd.* CUSH'IONET, n. *-ŭn-ĕt,* a little cushion.

CUSHMAN, *kûsh'man,* CHARLOTTE SAUNDERS: actress: 1816, July 23—1876. Feb, 18; b. Boston: descendant of the pilgrim, Robert C. (q.v.). She received a good musical education, and before her 12th year was aiding in the support of the family by singing in a church choir. In 1834 she made her first appearance on the stage, singing in Mrs. Joseph Wood's concerts in Boston. Her success secured for her a thorough training for the operatic stage, and she gave performances in Tremont Theatre, Boston, as Lucy Bertram in *Guy Mannering,* and the Countess Almaviva in the *Marriage of Figaro.* While fulfilling an engagement in New Orleans her voice suddenly failed. and she was induced reluctantly to abandon singing and study to become a tragic actress. She made her first appearance in her new profession 1835 as Lady Macbeth. She played through seasons in New York and Albany in female tragic parts, was leading actress in the Park Theatre, New York, 1837–40, manager of the Walnut Street Theatre, Philadelphia 1842–44, made a tour of the northern states with Mr. Macready 1844, and in the latter part of the same year appeared with extraordinary success in London and Dublin. Her foreign stay was prolonged beyond anticipation, and she did not return to the United States till 1849, Aug. She made a professional tour of the country, gave a farewell performance in New York 1852, May 15, and after visiting friends in England and on the continent played in London and the provinces 1853, Dec.—1857; then made a brief tour in the United States, and took up her residence in Rome, Italy, 1859, Jan. She played several times in the United States in the early part of the civil war for the benefit of the U. S. Sanitary Commission, gave several series of dramatic readings, and closed her career as an actress at the Globe Theatre, Boston, as Lady Macbeth, 1875, May 15. Among her leading characters were Elvira, Helen McGregor, Queen Katharine, Ophelia, Rosalind, Julia in *The Hunchback,* Katharine in *Taming of the Shrew,* Meg Merrilies, Nancy Sykes, Lady Gay Spanker; Cardinal Wolsey and Romeo.

CUSHMAN, ROBERT: 1580–1625; b. Kent, Eng.: one of the Plymouth pilgrims. He was associated with John Carver in facilitating the emigration of persecuted nonconformists from England to Holland, was sent on three missions to London to obtain grants of land in America for the settlement of the Leyden colonists, secured a patent 1619, purchased the *Mayflower,* and sailed in her, as asst. gov. of the pilgrims, from Southampton 1620, Aug. 5. A second vessel, the *Speedwell,* proved unseaworthy, was left with its passengers at Plymouth, and Mr. C. remained with them till a third vessel, the *Fortune,* took them all and reached Plymouth, Mass., 1621, Nov. 9. In the follow-

ing month he preached in the 'common house' of the colony the first sermon in America that was printed, on *The Sin and Danger of Self-love* (London 1622), and a few days afterward sailed for England as agent for the colonists. He was captured, plundered, taken to France and detained two weeks, published a vindication of the colonial movement and an appeal for Christian effort among the American Indians on reaching London, obtained a charter for a large tract of land on Cape Ann 1623, and died while closing his London affairs preparatory to returning to the colony.

CUSK: see TORSK.

CUSP, n. *kŭsp* [L. *cuspis* or *cuspĭdem*, a point, a lance: It. *cuspide*]: a point in a curve at which its two branches have a common tangent. If we conceive a curve to be generated by a moving point, then a C. is where the point suddenly stops and *returns* for a time in the same general direction as that in which it was moving when it reached the C. point. Cusps are of two kinds: 1, when the two branches, AB, AC, have their convexities turned in the same direction with respect to the common tangent at the C. point, as in fig. 1; 2, when they have their convexities

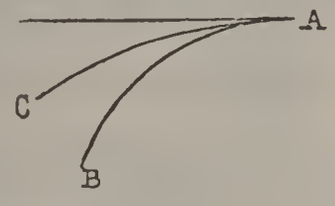
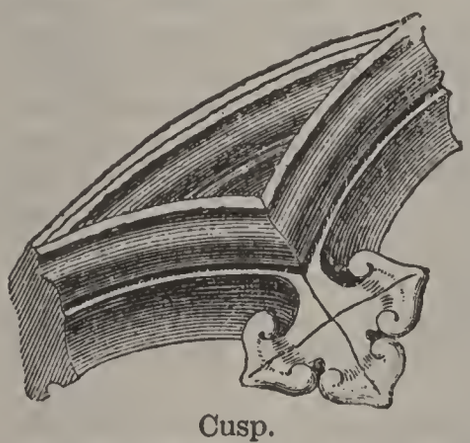


Fig. 1.

Fig. 2.

turned in opposite directions to the common tangent at the C. point, as in fig. 2. CUSP, in *astron.*, point or horn of the moon. CUSP, in *arch.*, projecting point or ornament formed by the meeting of two small arches or foils, in foil-arches (q.v.) or tracery; cusps often terminate in rich bosses of flowers or leaves. CUSPIDATE, a. *kŭs'pĭ-dāt*, in *bot.*, having a sharp end like a spear; ending in a bristly point; in *anat.*, applied to the canine or eye teeth.



Cusp.

CUSPARIA-BARK, n. *kŭs-pär'ĭ-a:* see ANGOSTURA BARK.

CUSPIDOR, n. *kŭs'pĭ-dōr* [Sp. *escupidor*, one who spits —from *escuper*, to spit]: a spittoon.

CUSSO, *kŭs'sō*, or KOSSO, *kŏs'sō*, or CABOTZ, *kâ'botz* (*Brayera anthelmintica*, or *Hagenia Abyssinica*): small Abyssinian tree of the nat. ord. *Rosaceæ*, sub-order *Spiraceæ*, the dried flowers of which have been long used in Abyssinia as an anthelmintic. and have been found so efficacious in the

removal of tape-worm, that they are now a much valued medicine in Europe. The flowers are simply dried, in order to be ready for the market; they have an aromatic, but

Cusso:

A, a branch, with leaves and flowers; B, a flower seen laterally; C, a female flower; *a*, *b*, *c*, *d*, *e*, the five outer segments of the calyx.

not very agreeable smell, and are administered in the form of an infusion.

CUSTARD, n. *kŭs'tẽrd* [probably a corruption of the OE. *crustade*, a dish of the 14th c., consisting of a kind of stew served up in a raised *crust*—from OF. *croustade*, a pastry, a tart, a crust]: a mixture of milk or cream and eggs sweetened and flavored, and afterward baked or boiled. Custards are of various kinds, such as plain, baked, lemon, orange, almond, coffee custards, etc. For a plain C., the following is a recipe given by M. Soyer: Mix a pint of boiling milk with two ounces of sugar and the thin yellow peel of half a lemon; then take four eggs, beat well in a basin, and add gradually the milk, etc. (not too hot); pass the mixture through a colander, and, having filled the custard cups with it, place them over the fire in a stew-pan, containing about one inch of hot water, and leave them here until sufficiently set (about 12 minutes is the time required). With this as a basis, a variety of custards are produced by addition of flavoring ingredients, as vanilla, almonds, orange-peel, etc.

CUS'TARD AP'PLE: name commonly given in the W Indies and other tropical countries to the fruits of certain species of *Anona*, genus of trees of the nat. ord. *Anonaceæ* (q.v.). Some of the fruits of this genus are among the most delicious produced in tropical countries, as the Cherimoyer (q.v.), and even the common C. A. (*A. reticulata*), regarded as a native of America, but now very common throughout the E. Indies, the variety cultivated in the Eastern Archipelago being much superior even to the W. Indian. The C. A. is a large, dark-brown, roundish fruit, sometimes from its size and appearance called Bullock's Heart in the

W. Indies; the tree is of considerable size. Some other American species of *Anona* are sometimes called custard apples, and two or three which are natives of W. Africa. To this genus belong also the Sweet-sop, the Sour-sop, the

Custard Apple (*Anona triloba*).

Pinana or Pinha, all of them tropical American fruits, and the ALLIGATOR APPLE of the W. Indies (*A. palustris*), a fruit of pleasant taste, but regarded as dangerously narcotic.

CUSTER, *kŭst'ĕr*, GEORGE ARMSTRONG, U.S.A.: 1839, Dec. 5—1876, June 25; b. New Rumley, O. He graduated at the U. S. Milit. Acad. 1861, June; performed staff service with Gens. Kearney, Smith, McClellan, and Pleasanton; appointed brig.gen. of vols. for unusual gallantry 1863, June 29; promoted maj. U.S.A. for checking the Confederate attempt to turn the left flank of the Union army at Gettysburg, 1863, July 3; brevetted lieut.col. for conspicious gallantry on Sheridan's raid toward Richmond 1864, May 11; brevetted col. for services at Winchester 1864, Sep. 19; appointed to command of the 3d div. of cav. 1864, Sep. 30; brevetted maj.gen. vols. Oct. 19; in command of cav. div. in pursuit of Confederate Gen. Lee 1865; promoted maj.gen. vols. on Lee's surrender; and chief of cav. in dept. of Tex. 1865–6. He served on the plains till 1871, was engaged against hostile Indians till 1873, opened the Black Hills (Dak.) region to miners 1874, and was killed with his entire command by confederated Sioux on the Little Big Horn river. Gen. C. was a conspicuously chivalrous and brilliant officer.

CUSTIS, *kŭs'tĭs*, GEORGE WASHINGTON PARKE: author: 1781, Apr. 30—1857, Oct. 10; b. Mt. Airy, Md.; son of Col. John Parke C., who was Mrs. Martha Washington's son by her first husband. He was the adopted son of Gen. Washington, and was educated at St. John's and Princeton colleges; remained in the Washington family till his grandmother's death, built Arlington house on the heights near Washington; was the father of Mrs. Robert E. Lee; and the author of several plays and orations and *Recollections of Washington* (New York, 1860).

CUSTOCK: see CASTOCK.

CUSTODY, n. *kŭs'tŏ-dĭ* [L. *custōdĭă*, a keeping or preserving—from *custos*, a guard: It. *custodia:* F. *custode*]: a guarding; a keeping; care or watch over for security or preservation; imprisonment (q.v.). CUSTO'DIAN, n. *-tō'dĭ-ăn*, one who has the care or custody of some public building; also CUSTO'DIER, n. *-ẽr*, one who. CUSTO'DIAL, a. *-ăl*, relating to guardianship.

CUSTOM, n. *kŭs'tŭm* [OF. *coustume* and *costume*—from mid. L. *costūma*, custom: It. *costume*, custom, usage—from L. *consŭētus*, usual, ordinary]: frequent repetition of the same act; established manner; the practice of frequenting a shop for the purchase of goods; usage; toll or tax: V. in *OE.*, to supply with customers; for 'accustom'. CUSTOMED, a. *kŭs'tŭmd*, in *OE.*, common; usual; for 'accustomed'. CUS'TOMS, n. plu. duties or taxes on goods imported or exported. CUSTOM-HOUSE, office of the govt. officials at a seaport, where customs-duties (q.v.) are paid, vessels entered and cleared, etc. The custom-houses at the chief ports of the United States have a large staff of officials of various departments and grades—the collector of the port being the highest. CUS'TOMABLE, a. *-ă-bl*, habitual; frequent. CUS'TOMABLY, ad. *-ă blĭ*. CUS'TOMARY, a. *-ẽr-ĭ*, usual; habitual; in common practice CUS'TOMARY, n., or CUS'TOMAL, n. in *archæol.*, a book descriptive of the customs of a manor or city. CUS'TOMER, n. *-ẽr*, one who frequents a shop for the purchase of goods: a buyer. CUS'TOMARILY, ad. *-ẽr-ĭ-lĭ*. CUS'TOMARINESS, n. frequency; habitual use.—SYN. of 'custom, n.': fashion; manner; method; practice; habit; prescription.

CUS'TOM, in English Law: established usage, either general or particular. For the principal doctrines relating to general customs, see COMMON LAW. Of particular customs, it may be remarked that, in order to establish them as law, they must be proved by verdict of a jury, except the C. of the city of London, which is proved by certificate by the lord mayor, aldermen, and recorder. A particular C. must, like a general C., be established as in force for a time whereof the memory of man runneth not to the contrary: see COMMON LAW. A C. must have been uninterrupted as regards its right, though the exercise of it may have been disused; it must have held without objection, and be unopposed to other customs; it must be not unreasonable nor uncertain in operation.

CUS'TOMARY FREE'HOLD, in English Law: species

of estate which, in all practical respects, is identical with Copyhold (q.v.), but in which the tenure is expressed to be according to the custom of the manor, without adding the words 'at the will of the lord.'

CUSTOMS DUTIES: portion of the public revenue derived from a tax on imports. The origin of the term is connected with the long conflict in Britain between the crown and parliament as to the right of taxation. To meet the claims made by the house of commons of the exclusive right to vote all supplies, it used to be maintained that there were certain duties on exportation and on importation to which the crown had acquired a right by *custom*, and after the power of parliament over this branch of taxation had been fully established, it retained its old name. This tax, after the excise came in force, was always applicable distinctively to goods changing place. There were customs not only upon things leaving and things coming to the British dominions, but also upon commodities transferred from one part to another. In Scotland, the duty on commodities imported into any town from a foreign country was called the great custom; and the duty charged by a burghal corporation on commodities coming from the country districts within its walls was called the small or petty customs. At present, the term C. D. applies solely to the tax levied on commodities imported from abroad.

The tax on imports was of old a simple percentage, familiarly known to the readers of English history as 'tonnage and poundage,' from the method in which it was adjusted to heavy and light goods. Subsequently, however, the notion prevailed that the C. D. might not only be a source of revenue, but an instrument for furthering the various theories about protecting this trade and discouraging that, which prevailed from time to time. When it was held as an established principle, with regard to any trade, that the customs should be adjusted in such a manner as either to aid or to impede it, the regulations regarding that trade alone would have complexity enough for a whole code of customs laws, the object of which was mere revenue. The more complex the arrangements, the more open were they to the machinations of the smuggler or defrauder, and consequently regulation had to be added to regulation, till the whole became a chaos. In some instances, the duties were such as to act as a prohibition to importation; in others, merely as a heavy increase on the price. In either case, there would be relaxations in favor of the produce of British colonies, and perhaps of some favored country with which Briton had a treaty of reciprocity. Then, to encourage British trade and manufactures, it was considered politic to allow goods be imported for exportation abroad, or to be imported for the purpose of being worked up into a manufacture, and there would be a difference between the extent of encouragement granted to that manufacture, if it were for home consumption or for exportation. The method in which such relaxation was accomplished was at first by charging the

duty on the importation, and afterward repaying it by what was called a 'drawback;' and this was subsequently accomplished in an easier method for the importer, by allowing him to 'bond' the goods in the government warehouses until the duty was paid, or the conditions which dispensed with it fulfilled: see WAREHOUSING SYSTEM.

The free-trade legislation of 1846, in Britain, cleared away a great mass of customs regulations, and almost every year has contributed to the abbreviation of the list of duties or tariff (q v.). Nearly the whole customs revenue is now derived from tea, coffee, dried fruits, spirits, wine and tobacco. Thus simplified and reduced, the customs duties supply an enormous revenue.

The defects which, according to the doctrines now prevalent in Great Britain, are to be avoided in a code of customs, are—1. The prohibition or discouragement of the importation of useful commodities; 2. Encouragement to the smuggler; and 3. Loss of revenue by raising the duty to the height which discourages importation. Under the first head, see ANTI-CORN-LAW LEAGUE: CORN LAWS: FREE-TRADE. The second is connected with the view that on stimulants the duty cannot be too high, even though it should greatly impede their importation—the duty on tobacco is, in some instances, as high as 900 per cent, on the value of the article. But then, if the smuggling trade be encouraged, the stimulant is not only obtained without any contribution to the revenue, but the people become demoralized, and trained to crime. Under the third head, a memorable example is furnished by the sugar-duties of France, which were so high that the native agriculturists could make sugar from beet-root a little cheaper than the duty-paid foreign sugar. Hence the article was dear, for had it not been for the height of the duty, it would not have been worth while to make it at home, and at the same time there arose little or no revenue from it.

The collection and general management of the British customs duties is under one great central department of the government in London. The office of receiver-general was, in 1871, united with that of the comptroller-general, and there is a fourfold division into the paymaster's, examiner's, accountant's and auditor's branches.

In the United States the collection of customs duties is under the official control of the secretary of the treasury and the immediate management of the commissioner of customs. This form of taxation, known as indirect because not laid on individual citizens, is conducted wholly in accordance with the provisions of the federal constitution, and by the national govt. exclusively, the constitution prohibiting any state to lay any imposts or duties on imports or exports except for executing its inspection laws. The congress decides from time to time by means of a tariff bill the various articles on which duties shall be laid and the amount, and the collection is made at ports of entry by govt. officers as the imported goods are received and before they are delivered to the owner or his representative. Customs duties must belong to one of two classes: those charged on given units of weight or measure, as the pound,

ton, yard, gallon, etc., called specific duties; and those charged by a percentage on the estimated value, called ad valorem duties. On many kinds of goods the two are combined in what are called compound duties; and a variant of the ad valorem system is what is called the minimum duty, under which all goods costing less than a certain sum are assumed to have cost that amount and are taxed upon it. In the old English disputes between king and Parliament specific duties were called 'tonnage' (so much per ton); and ad valorem duties 'poundage' (such a per cent. on the estimated value in pounds sterling) though levied so as not to be purely ad valorem. Previous to the civil war the expenses of the national govt. were met almost entirely by the proceeds of custom duties, from 1849 to 1862, inclusive, there having been no internal revenue receipts; and only in the year 1850 did the miscellaneous receipts, aside from public lands, amount to more than $1,500,000. But the extraordinary outlays that followed necessitated the imposition of excises on various domestic manufactures, and in 1866, when internal revenue taxes reached the highest point, the receipts were $309,226,813, and the miscellaneous receipts $29,036,314 while in the same year the customs receipts were only $179,046,651. While the national revenue has proceeded largely from customs duties these became secondary to int. rev. 1898–1902. The following table shows this proportion, postal receipts being omitted:

Years.	Total Ordinary Receipts.	Customs.	Other Receipts.
1870	$395,959,833	$194,538,374	$201,421,459
1871	374,431,104	206,270,408	168,160,696
1872	364,394,229	216,370,286	148,023,943
1873	322,177,673	188,089,522	134,088,151
1874	299,941,090	163,103,833	136,837,257
1875	284,020,771	157,167,722	126,853,049
1876	290,066,584	148,071,984	141,994,600
1877	281,000,642	130,956,493	150,044,149
1878	257,446,776	130,170,680	127,276,096
1879	272,322,136	137,250,047	135,072,089
1880	333,526,500	186,522,064	147,004,436
1881	360,782,293	198,159,676	162,622,617
1882	403,525,250	220,410,730	183,114,520
1883	398,287,582	214,706,497	183,581,085
1884	348,519,870	195,067,490	153,452,380
1885	323,690,706	181,471,939	142,218,767
1886	336,439,727	192,905,023	143,534,704
1887	371,403,278	217,286,893	154,216,385
1888	379,266,075	219,091,174	180,174,901
1889	387,050,059	223,832,742	163,217,317
1890	403,080,983	229,668,585	173,412,398
1891	392,612,447	219,532,205	173,090,242
1892	354,937,785	177,452,964	177,484,819
1893	385,819,628	203,355,016	182,464,611
1894	297,722,266	131,318,530	165,903,487
1895	313,390,075	152,158,617	161,231,458
1896	326,976,200	160,021,752	166,954,448
1897	347,721,905	176,554,126	171,167,779
1898	405,321,335	149,819,594	255,501,741
1899	515,652,666	206,141,225	309,511,441
1900	567,240,852	233,164,871	334,575,981
1901	587,685,338	238,585,456	349,099,882
1902	562,478,233	254,444,709	308,033,524
1903	560,396,674	284,479,582	275,917,092
1904	540,631,749	261,274,565	279,357,184
1905	544,274,685	261,798,857	282,475,828
1906	594,914,715	300,657,413	294,257,302

CUSTOS ROTULORUM, *kŭs'tŏs rŏt'ū-lō-rŭm* [L. *custos*, a keeper; mid. L. *rotŭlŭs*, a roll, a register—from L. *rŏtŭla*, a little wheel]: in *Great Britain*, the keeper of the rolls or registers of the sessions: the principal justice of the peace and chief civil officer within the county appointed by the crown to keep the county records.

CÜSTRIN′: see KÜSTRIN.

CUT, v. *kŭt* [W. *cwtt* and *catt*, a little piece: comp. Gael *cutach*, short, diminutive *cutaich*, to shorten, to lop: Ir. *cut*, a short tail]: to separate by a cutting instrument into short pieces; to divide; to sever; to reduce, as prices; to hew, as timber; to penetrate or pierce; to affect deeply; to intersect or cross; to intercept: N. a piece separated by cutting; a stroke or blow with a sharp instrument; a cleft; a notch; a gash; a channel or ditch made by digging or cutting; a carving or engraving, likewise the print from it; form; shape; fashion. CUT, pp. and pt. divided; pierced; deeply affected: ADJ. divided; carved; intersected. CUT′TING, imp.: ADJ. sarcastic, severe: N. an incision; a piece cut off; a portion of a plant bearing a bud, for propagation; a long deep excavation, as in making a road, a railway or a canal. CUT′TER, n. one who or that which cuts; one of the boats of a large ship; a light swift vessel with one mast; [U. S.] a small, light sleigh; an incisor tooth. CUT′TERS, n. plu. in a *machine*, knives that cut; bricks used chiefly for the arches of windows, doors, etc. CUT′TINGLY, ad *-lĭ*. CUT-GRASS, *Leersia oryzoides*, the leaves being so rough as to cut the hand. CUT-OFF, a shorter passage or route; in *machinery*, term applied to that arrangement for using steam or elastic fluid, in which it is admitted to the cylinder during a portion only of the stroke of the piston; the steam, after the induction ceases, working expansively in the cylinder during the remainder of the stroke. CUT-VELVET, piled goods in which the loops are cut. TO CUT A FIGURE, to show off conspicuously. TO CUT A JOKE, to be witty and sociable. TO CUT DOWN, to reduce; to retrench to fell, as timber. TO CUT OFF, to separate to destroy; to intercept. TO CUT UP, to divide into pieces. TO BE CUT UP, applied to an army in the field that has lost many men in killed and wounded; *familiarly*, to be annoyed or disturbed. TO CUT OUT, to remove a part; to shape. CUT OUT, suited for the occupation by his natural abilities. TO CUT OUT A SHIP, to enter a harbor and seize and carry off a ship by a sudden attack. TO CUT SHORT, to abridge. TO CUT A KNOT, to effect anything by short and strong measures. TO CUT THE CARDS, to divide a pack into two portions. CUT AND DRY or DRIED, prepared for use; already prepared. CUT OF HIS JIB, the contour or expression of his face as indicating his character; a sailor's term, the jib indicating the character of the ship. TO CUT IN, to divide; to join in anything suddenly. TO DRAW CUTS [W. *cutws*. lot]: to draw lots by means of straws or pieces of paper, etc, cut in pieces of different lengths and held between the

forefinger and thumb. CUT-PURSE, a thief; a robber. CUT-THROAT, a murderer; an assassin: ADJ. murderous; barbarous. CUT-WATER, the fore part of a ship's prow that cuts the water.

CUT, v. *kŭt* [Gael. *cuite*, to quit; *cuidhte*, to go away]: in *familiar slang*, to run away; to avoid meeting or coming into contact with. CUT, v. impera. run away; be off. TO CUT ONE, to refuse or avoid recognizing him when meeting or passing; to renounce acquaintanceship. TO CUT CAPERS, to conduct one's self in a ridiculous or improper manner. CUT YOUR STICK [perhaps Gael. *teich*, to flee; to be off]: take up your staff or belongings and be off; also CUT AND RUN, in same sense. CUT A DASH, to make a great show. CUT AWAY, be off at once; go away fast. *Note.*—We have in OE. *cut*, in Scot. *cutty*, an animal with a short or *cut* tail, an abusive word applied to a woman: Dut. *kutte;* Fin. *kutta*, the distinctive features of a woman, a feeble womanly man: such familiar phrases as '*cut* an acquaintance,' '*cut* of his jib,' '*cut* capers,' may have originated from the treatment accorded by a warlike race to non-warlike or effeminate men; without doubt the present entry is much confused in its meanings by a supposed identity with CUT 1: see COTQUEAN, note.

CUTANEOUS, a. *kū-tā′nē-ŭs* [L. *cutānĕus*—from *cŭtis*, skin: allied to Skr. *sku*, to cover: It. *cutaneo;* F. *cutané*, cutaneous]: pertaining to the skin; affecting the skin.

CUTANEOUS SENSATION. See SENSATION.

CUTCH: commercial name for CATECHU, which see.

CUTCH, *kŭch*, or KACHH: a protected state under the presidency of Bombay, stretching along the gulf of its own name and the Indian Ocean between Guzerat and Sinde; n. lat. from 22° 45′ to 24° 40′, and in e. long. from 68° 26′ to 71° 45′, containing, in something of a triangular form with the maritime line as a base, 15,100 sq. m. It is divided naturally into Cutch Proper and the Runn of Cutch.—1. Cutch Proper, 6,500 sq. m., and numbering nearly all the inhabitants, is the belt on the sea-shore, touching Sinde, of which it may be regarded as a physical continuation, on the n.w., and being separated by a detached portion of the Runn from Guzerat on the s.e. While the s. edge of this belt is merely a sandy desert, the n. section, traversed lengthwise by two parallel ranges of hills, presents, amid much sterility, many fertile tracts, which yield cotton, rice, etc., and feed a large stock of horses, kine, buffaloes, and camels. The grand defect of the country is the scarcity of water. Hence the crops occasionally fail from the scantiness of irrigation; and in 1861, March, this region was said to be suffering more severely than almost any other in India from a nearly general famine. Timber is scarce, for the growth in the mountains is chiefly brushwood. Here and there, however, decayed trunks of great size,

particularly on the s. ridge, indicate the former existence of noble forests. The mineral productions are coal, iron, and alum. The traces of volcanic action are numerous. Earthquakes have recently occurred; one of which, 1819, July, beside shaking every fortification to its foundations, and destroying several hundreds of people, threw up an enormous mound of earth and sand many miles in extent, and simultaneously submerged an adjacent district of corresponding size. The ruler is styled the Rao; and the feudatory chieftains under him number about 200. Pop. of Cutch Proper (1901) 487,374.

2. Runn of Cutch.—subdivided into two parts, the smaller, of 1,600 sq. m., on the e., and the larger, of 7,000 sq. m., on the n.—is merely a twofold desert, being, in a great measure, hard ground during the dry season, and then, in turn, a sort of shallow lake or salt morass formed by the heavy rains and pent-up tides of the s.w. monsoon. It is supposed to have been originally a permanent inlet of the ocean, and to have had its level raised bv some such convulsion of nature as that which marked the year 1819.

CUTCH (or Kachh), Gulf of: arm of the Arabian Sea, extending into the west coast of India about 110 miles, forming an outlet for the salt marshes of Cutch in India, and in many parts so shallow as to resemble rather a marsh. It is 110 m. long, between Cutch and Guzerat.

CUTCHA, a *kŭch'ă* [Hind. *kacha*, raw]: makeshift; temporary; doubtful; unsatisfactory; being thus opposed to *pucka* [hind. *pakka*, ripe]. *Note.*—A solidly-built house of stone or brick is a *pucka* house; but one made of mud and brick, or lath and plaster, is a *cutcha* affair. The permanent holder of an appointment is said to possess a *pucka* post; while his *locum tenens* would be holding a *cutcha* one: a metalled road is *pucka;* an unmade cross-country track is a *cutcha* road.

CUTCHERY, n., also spelled Kachchari, properly Kachahri, n. *kŭt-chèr'ĭ* [Hind.]: in the *E. Indies*, the court of a magistrate of any kind.

CUTCH GUNDAVA, *kŭch gŭn-dâ'vâ:* province of n.e. Beloochistan, bet. lat. 27° 40′ and 29° 50′ n., and long. 67° 20′ and 69° 20′ e.; borders on Sinde and Afghanistan bounded w. by the Hala. Mountains containing the Bolan Pass. It is 150 m. long n. to s., 130 m. wide, abt. 10,000 sq. m.; cap. Gundava. Though almost surrounded by deserts of large area, it has considerable tracts of fertile soil on which cotton, Indian millet, sugar, madder, indigo, and various fruits are cultivated. The inhabitants are chiefly Juts, and the greater part of trading is carried on by Hindus. Pop. abt, 100,000.

CUTE, a. *kūt* [a familiar contraction for *acute*]: sharp; clever. [U.S. Colloq.]: bright and winsome.

CUTH, n. *kôth* [Icel.]: in *N. of Scot.*, the young of the coal-fish: see note under Cuddy.

CUTHBERT, *kŭth'bĕrt:* disciple of the Venerable Bede in the monastery of Jarrow, of which he himself was afterward abbot. He was present at the death of his master 735, and has left a beautiful and touching relation of the event in a letter to his fellow-disciple, Cuthwine. It has been often printed; the best editions are those in Twysden's *Decem Scriptores* (Lond. 1652), and in Stevenson's edition of Bede's *Historia Ecclesiastica* (Lond. 1838).

CUTH'BERT OF CANTERBURY: native of the kingdom of Mercia; became Bishop of Hereford 736, and Archbishop of Canterbury 740: died 758. An instructive letter was addressed to him by St. Boniface (or Winfrid) on the ecclesiastical abuses of the age. It has been printed more than once, and is in the appendix to the late Prof. Hussey's edition of Bede's *Historia Ecclesiastica* (Oxon. 1846).

CUTHBERT, SAINT, OF DURHAM: abt. 635–687, Mar. 20: one of the three great saints of England in the middle ages; the other two being St. Edmund of Edmundsbury, and St. Thomas-à Becket of Canterbury: neither his birthplace nor his parentage has been ascertained; but a legend, which was long generally believed, told that he was born in Ireland, and drew his lineage from one of the petty kings of that country. When the light of record first falls upon him, he is a shepherd boy in the kingdom of Northumbria, which then stretched northward to the Forth. In 651, while watching his flock by night on the heights of Lauderdale, he believes that he sees the heavens open, and a company of angels descend upon the earth, and again ascend to heaven, carrying with them the soul of St. Aidan, the pious bishop of Lindisfarne, or Holy Island. The vision determines him to become a monk, and in the same year he enters the monastery of Melrose, of which St. Boisil was then provost or prior, and St. Eata, abbot. When the latter removed to the newly-founded monastery of Ripon, St. C. accompanied him, and was appointed to the office of superintendent of the guests. In 661, St. Boisil died of the plague, which then ravaged Britain, and St. C. was chosen to succeed him as provost or prior of Melrose. While in this office, he distinguished himself by his assiduity in visiting the neighboring villages, and especially the remoter mountain hamlets, sometimes on horseback, oftener on foot, and laboring by his teaching and example to reclaim the people from the superstitious or pagan rites into which they had fallen. After a few years spent in this way, he left Melrose for the island monastery of Lindisfarne, of which he became provost or prior, his old master, St. Eata, being abbot. Longing for an austerer life even than the monastic, he quitted Lindisfarne 676, to become an anchorite, or solitary recluse, in a hut which he built with his own hands on Farne Island. Here, 684, he was visited by Ecgfrid, King of Northumbria, Trumuine, ex-bishop of the Picts, and other great men of the north, who came at the request of the synod of Twyford to entreat that he would accept the bishopric of Hexham. He reluctantly complied with their wishes, but his heart was still with his Northumbrian islands. He ex-

changed the see of Hexham for that of Lindisfarne, and still thirsting after solitude, at the end of two years he resigned his bishopric, and returned to his hut in Farne Island, where he died. The anniversary of his death was a great day of observance in the English Church, which commemorated also Sep. 4, as the anniversary of the day on which his body was translated to Durham. The influence which St. C. exercised upon his age seems to have been due chiefly to his fervent piety and extraordinary asceticism. The gift of a persuasive tongue is ascribed to him, and he seems to have had skill and prudence in the management of affairs, but nowhere is there any trace of his learning.

The fame of St. C., which had been great during his life, became far greater after his death. Churches were dedicated to him throughout all the wide country between the Trent and Mersey on the south, and the Forth and Clyde on the north. When his tomb was opened at the end of 11 years, it was believed that his body was found incorrupt, and so, for more than 800 years, it was believed still to continue. It remained at Lindisfarne till 875, when the monks, bearing it on their shoulders, fled inland from the fury of the Danes. After many wanderings through the s. of Scotland and the n. of England, it found a resting-place at Chester-le-Street 882. It was transferred to Ripon 995, and in the same year it was removed to Durham. Here, inclosed in a costly shrine, and believed to work daily miracles, it remained till the Reformation, when it was buried under the pavement of the cathedral. The grave was opened 1827, when a coffin, ascertained to have been made in 1541—when the body was committed to the earth—was found to inclose another, which there was reason to suppose had been made in 1104; and this again inclosed a third, which answered the description of one made in 698, when the saint was raised from his first grave. This innermost case contained, not, indeed, the incorruptible body of St. C., but his skeleton, still entire, wrapped in five robes of embroidered silk. Fragments of these, and of the episcopal vestments, together with a comb and other relics, found beside the bones, are seen in the cathedral library. The asceticism which distinguished St. C. in life long lingered round his tomb. Until the Reformation, no woman was suffered to approach his shrine; the cross of blue marble still remains in the cathedral floor which marked the limits beyond which female footsteps were forbidden to pass, under pain of instant and signal punishment from the offended saint. His wrath, it was believed, was equally prompt to avenge every injury to the honor or possessions of his church. It was told that William the Conqueror, anxious to see the incorrupt body of the saint, ordered the shrine to be broken open; but scarcely had a stroke been struck, when such sickness and terror fell upon the king, that he rushed from the cathedral, and, mounting his horse, never drew bridle till he had crossed the Tees. A cloth, said to have been used by St. C. in celebrating mass, was fashioned into a standard, which was believed to insure victory to the army in whose ranks it

was carried. Flodden was only one of many fields in which the defeat of the Scots was ascribed to the banner of St. Cuthbert. It hung beside his shrine until the Reformation, when it is said to have been burnt by Calvin's sister, wife of the first Protestant dean of the cathedral.

The life of St. C. was twice written by the Venerable Bede—briefly in vigorous hexameters in his *Liber de Miraculis Sancti Cuthberchti Episcopi;* at greater length, in prose, in his *Liber de Vita et Miraculis Sancti Cudbercti Lindisfarnensis Episcopi.* In this latter work, he made use of an earlier life by a monk of Lindisfarne, which is still preserved. Besides these lives—all of which have been printed more than once—and what is told of St. C. in Bede's *Historia Ecclesiastica Gentis Anglorum*, the chief ancient authorities are the *Historia Translationis S. Cuthberti*, published by the Bollandists, in the *Acta Sanctorum, mens. Martii*, vol. iii.; the *Libellus de Exordio Dunhelmensis Ecclesiæ* by Symeon of Durham; the *Libellus de Nativitate S. Cuthberti de Historiis Hybernensium excerptus*, and the *Libellus de Admirandis B. Cuthberti Virtutibus*, by Reginald of Durham, both published by the Surtees Society. There are two modern memoirs of St. C.—the late Rev. James Raine's *St. Cuthbert* (Durham, 1828), and the Very Rev. Monsignor C. Eyre's *History of St. Cuthbert* (Lond. 1849).

CUTH'BERT'S BEADS, ST.: see BEADS.

CUTICLE, n. *kū'tĭ-kl* [F. *cuticule*—from L. *cutic'ŭla*, thin skin—from *cŭtis*, the skin]: the thin exterior coat of the skin; the scarf-skin or epidermis (see SKIN): the pellicle which forms the outer layer of the body among the Infusoria; the thin external covering of a plant. CUTIC'ULAR, a. *-tĭk'ū-lĕr*, pertaining to the cuticle or external coat of the skin.

CUTIS, n. *kū'tĭs* [L. skin]: the inferior vascular layer of the skin, often called the *cutis vera*, the *corium*, the *derma* or *dermis*, or the true skin, in contradistinction to the cuticle or outer skin.

CUTLASS, n. *kŭt'lăs* [a corruption of OE. *curtal-axe;* F. *coutelas*, a hanger or sword: It. *coltello;* Venet. *cortelo*, a knife]: a sword abt. 3 ft. long, broad and straight, with japanned hilt; used mostly in the navy by seamen in boarding an enemy's ship: see CURTLE-AX.

CUTLER, n. *kŭt'lĕr* [OF. *coutel*, a small knife—from It. *coltello*—from L. *cultellus*, a small knife—from *culter*, a knife: F. *coutelier;* OF. *cotelier*, a maker of knives]: one who makes knives and other cutting instruments.

CUTLER, *kŭt-lĕr*, MANASSEH, LL.D.: 1742, May 3—1823, July 28; b. Killingly, Conn.: Congl. minister; botanist and statesman. He graduated at Yale College 1765, was admitted to the bar of Mass. 1767, licensed to preach 1770, and ordained pastor of the Congl. parish at Ipswich, Mass., 1771, Sep. 11. He was appointed chaplain in the continental army 1776, studied and practiced medicine, and was elected a member of the American Acad. 1781. He led the expedition that settled Marietta, O., 1788, was commissioned

judge of the supreme court of Ohio terr., but declined the office. 1795, drafted the ordinance that excluded slavery from the n.w. terr. 1787, and was member of congress as a federalist, 1801, Dec. 7–1805, Mar. 3. He contributed numerous papers to the American Acad., examined and classified 350 species of plants found in New England, and received his degree from Yale, 1791.

CUTLER, Timothy, D.D.: 1685–1765, Aug. 17; b. Charlestown, Mass.: minister. He graduated at Harvard Univ. 1701, spent 10 years as pastor of the Congl. church at Stratford, Conn., was appointed rector of Yale College 1719, and was dismissed for maintaining the divine right of episcopacy, 1722. He took priest's orders in England, and was rector of Christ Episc. Church, Boston, 1723, July, till his death. He received his degree from Oxford and Cambridge, 1723.

CUTLERIA, n. *kŭt-lē'rĭ-a* [named by Dr. Greville after Miss *Cutler*, of Sidmouth, a zealous student of marine botany]: genus of algæ, ord. *Cutleriaceæ* (Fucoid Algæ) of which the type is *Cutleria multifida*. Cutleriaceæ, family of fucoid algæ.

CUTLERY: general name for all kinds of cutting instruments, such as knives, forks, scissors, razors, etc. The workman who makes these is called a cutler; the sword-maker, a sword-cutler; but in England, the manufacturer of workmen's tools is called a 'tool-maker,' or a '*steel toy-maker*,' not a cutler. In Birmingham, for example, such implements as hammers, chiscls, pincers, hatchets, etc., are technically called toys.

Shells, flints, and other sharp-edged stones formed the rudest and most ancient cutting instruments, and the earliest traces of human existence in many lands, are associated with stone 'celts' and other weapons and cutting implements. These were followed by bronze weapons and implements, which were in use among the Romans for some purposes till near the Christian era, bronze surgical instruments having been found at Pompeii. This bronze, like steel, could be made soft for working into shape, and then hardened, but by the opposite means used for hardening and softening of steel, bronze being softened by sudden cooling from a red heat, and hardened by slow cooling. Some cities in Spain and the north of Italy acquired high reputation for the manufacture of cutting instruments, particularly swords, during the middle ages, when the chivalry of the period sought the best equipments. Latterly, all European countries have been outstripped by England as regards tastefulness, excellence, and cheapness in cutlery. In this kind of manufacture, the lead is taken by Sheffield, which had gained a name for its *whittles* as early as the reign of Richard I. Why, with their ingenuity, taste, and skill in the arts, neither the French nor Belgians succeed in their C., would be difficult to explain. Certain it is that their C. is comparatively inferior as regards temper and finish, while their apparent incapability of making the delicate hinges and springs of clasp-knives.

has often been remarked. However, continental cutlery is rapidly improving, particularly in table-knives, of which an excellent French article is now made. In the manufacture of American axes, Canada has made marvellous advances, its produce as respects this article excelling that of England.

Good *table-knives* are made of steel and iron, welded together; the tang, which goes into the handle, and the shoulder, are of iron, and the blade of steel. The tang and shoulder are forged from bar-iron, and the blade from shear or cast steel. Knife-blades, razor-blades, and other small articles, are usually forged into their required shape while still attached to the bar, which serves for the workmen to hold them by, and is called the 'porter.' When the bar becomes too short, it is grasped in a pair of tongs held close by a ring which clamps them by sliding up their conical handles. Two men are employed in forging such work, which is said to be 'two-handed.' The principal workman, or 'fireman,' uses a small hammer of 2 to 4 lbs. weight, while the 'hammerman' wields the sledge hammer, weighing from 10 to 15 lbs. The 'fireman,' who attends the heating as well as the anvil-work, directs the hammerman, whose blows merely follow those of the small directing hammer of the fireman. In *drawing down* or *reducing* a bar both in length and width, the flat face of the hammer is used; but when the length or breadth alone is to be extended, only the 'pane' or narrow edge of the hammer. The concavity of razor blades is made by hammering the blade on a small round-faced anvil; the notch or 'nail-hole' of a penknife is struck by means of a chisel of the required form. Superior work, such as razor-blades, are *smithed* after forging—that is, beaten upon an anvil, to condense the metal as much as possible—and slightly ground or *scorched* on a rough stone, to finish the shaping, and remove the 'scale' or black oxidized surface, which would interfere with the color of the tempering. Common knives are made entirely of iron, and the difference of price arises not merely from the difference of cost of the material, but from the greater facility of working. In many articles composed of steel welded to iron, the saving of steel is not the only advantage, for steel being more brittle than wrought iron, it is very desirable, in all articles subject to a transverse breaking strain or to concussion, that every part except the cutting or working edge should be of iron. Thus, a hatchet made entirely of steel would be far less durable than one of iron with a welded steel cutting-edge. A table-knife with a steel tang would be weaker than one with an iron tang. Hammers should only be *faced* with steel, etc.

The great usefulness of steel for all kinds of implements used for cutting or exposed to wearing friction depends upon its property of acquiring a high degree of hardness when heated and suddenly cooled, and of then being capable of softening again in various degrees by reheating moderately.

Table-forks are forged rudely into the shape of the tang and shank, first as though but a single thick prong were required; the part for the prongs is then beaten out, and a stamping-die is brought down upon it, which forms the prongs, with a thin film of steel between them; this is cut out by a cutting-die. Then they are softened and filed up, again hardened, and tempered, and ground, to smooth and finish. The dry-grinding of forks, needles, etc., is a very deleterious occupation, on account of the particles of steel which enter the nostrils of the workmen, and produce painful irritation, followed by a peculiar pulmonary disease called 'grinders' asthma,' which is said to shorten life so seriously that few dry-grinders exposed to the steel dust reach 40 years of age. Many remedies have been proposed for this. A magnetic mouthpiece was invented; but the workmen would not wear it, on account of its novelty, its grotesque appearance, the trouble of cleaning it, and the belief that if their trade were made more healthful, greater numbers would enter it, and wages would be reduced. A revolving fan, which sets in motion a current of air, that is carried by a pipe to the outside of the building, has been used with greater success, and is now in general use when it can be applied, though its introduction was much opposed by the workmen. In the needle-trade, especially, it has been most beneficial, entirely removing danger from the operator. The use of wet stones would, of course, fully obviate the evil, but they are not applicable to many kinds of work, especially that which is ground before hardening, as the stone wears away very rapidly under these circumstances.

Penknives and other pocket-knives are the work of many hands. Besides the blades, there are the separate pieces of the spring, the handle, rivets, etc., the making of each of which is a distinct trade. All these pieces are finally fitted and put together by the finisher; a good two-bladed knife passes through his hands from 70 to 100 times. The difference in the amount of labor bestowed on the best and the commonest cutlery is very remarkable, and the difference of price is of course proportionate.

CUTLET, n. *kŭt'lĕt* [F. *cotelette*—from *côte*, a rib, a slope: a dim. of Eng. *cut* (see Cut 1)]: a small chop or slice of meat for cooking—generally applied to veal.

CUTOSE, n. *kū'tōz* [L. *cutis*, skin]: cutin, a kind of cellulose forming the fine transparent membrane which covers the exposed parts of vegetables.

CUTTACK *kŭt-tăk':* district in the province of Orissa, presidency of Bengal; on the n.w. coast of the Bay of Bengal; 3,517 sq. m., pop. 1,937,671.

The name Cuttack, however, has been generally used to include the three districts of Cuttack, Pooree, and Balasore; joint area 8,056 sq. m.; pop. est. 3,750,000. This larger district extends in n. lat, from 19° 40′ to 21° 45′, and in e. long. from 85° 8′ to 87° 31′. The Mahanuddee is the main river, its delta being wholly comprised within the district. Among the natural features of the country, the most

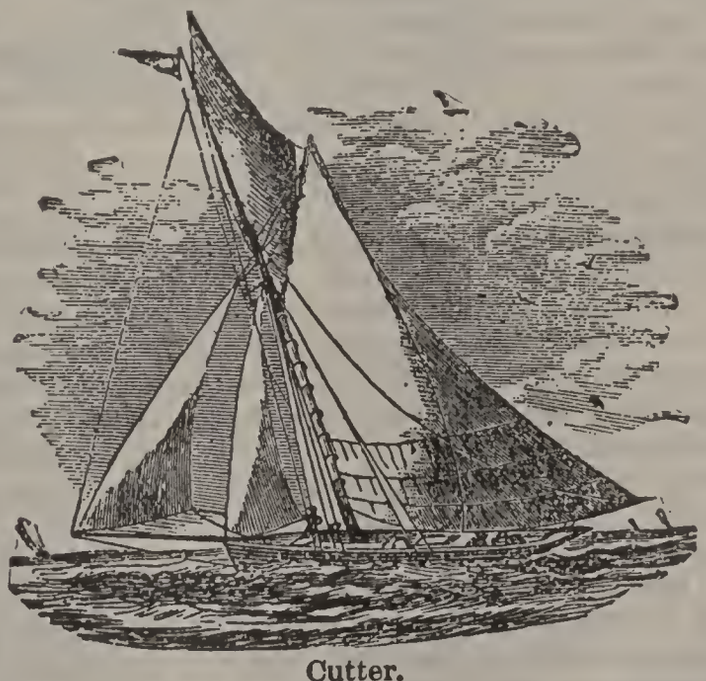
remarkable is the Chilka Lake which is, for many miles, separated from the sea by a strip of sand not more than 300 yards wide. Next to Cuttack, the chief towns, reckoning from the s., are Poorree, with its temples of Juggernaut, at the mouth of the most southerly arm of the Mahanuddee; Kanarak, or the Black Pagoda, about 20 m. farther n. and Balasore. The trade of the district is inconsiderable. Iron ore is said to be found.

CUTTACK′ ('Royal Residence'): capital of a district of its own name in the province of Orissa, presidency of Bengal; immediately below the bifurcation of the Mahanuddee, thus occupying the apex of the delta of that river. The advantage, however, of this position, in a political and commercial point of view, seems neutralized by the cost of providing against the encroachments of the bordering streams. The city has no pretensions to architectural beauty. It has very little trade; and its manufactures are principally shoes and brass cooking-vessels. Cuttack is 220 m. s.w. of Calcutta; lat. 20° 28′ n., and long. 85° 55′ e. Pop. about 50,000.

CUTTEAMUN′DU: juice of *Euphorbia Cuttimundu*, a species of spurge (q.v.), native of India, particularly of the Northern Circars. It is used for cementing iron with other substances, as for uniting the blade and handle of a knife. The fresh juice is used as a vesicant. In a dried state, it is capable of being molded into any form, and a great variety of articles may be made of it, as of gutta-percha.

CUTTEE, n. *kŭt′tē:* in *weaving*, the box to hold the quills in a weaver's loom.

CUT′TER: name of two kinds of small vessels. The cutters used by yachtsmen, smugglers, and revenue cruisers,



Cutter.

and which are built with especial reference to speed, have a single mast, and a straight running bowsprit that can be run in on board occasionally. They are much like sloops

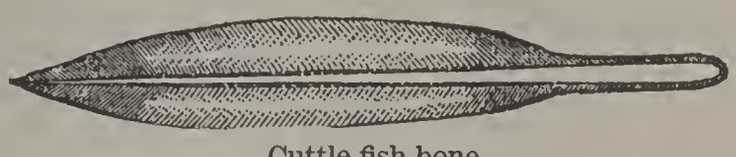
in rig, but have larger sails. Such small vessels occasionally venture on long voyages. In 1857, the *Charter Oak*, a C. of 23 tons, crossed the Atlantic from New York to Liverpool; and, in 1858, the *Christopher Columbus*, a C. of 45 tons, with a crew of only two boys, besides the owner, made the same voyage in 45 days. Schooners and sloops have always been the favorites of American yachtsmen for racing purposes. Prior to 1885, all the international contests for the America cup were sailed with them. In that year the Royal Yacht Squadron of England sent over the *Genesta*, a C., which was beaten by the sloop *Puritan* of the Eastern Yacht Club by 16 min. 19 sec. and 1 min. 38 sec. In 1886, the C. *Galatea* of the Royal Northern Yacht Club was beaten by the sloop *Mayflower* of the Eastern Yacht Club by 12 min. 2 sec. and 29 min. 9 sec.; and in 1887, the C. *Thistle* of the Royal Clyde Yacht Club was beaten by the sloop *Volunteer* representing the Eastern and New York Yacht Clubs by 19 min. $23\frac{3}{4}$ sec. and 11 min. $47\frac{3}{4}$ sec. In the annual regattas 1887, no C. was entered for that of the Atlantic Yacht Club, one won a prize in the New York Yacht Club, none in the Seawanhaka Corinthian Club, one in the Eastern Yacht Club, Boston, and two in the Corinthian Yacht Club.—The cutters belonging to ships of war are clincher built boats, about 24 to 28 ft. in length, employed for various purposes; they weigh from 10 cwt. to 24 cwt. each. Two such cutters are supplied to every ship of war except of the smallest kinds.

CUTTINGS: branches or portions of branches of trees or shrubs, employed to produce new plants, by the insertion of the lower end into the earth. By care, and in the most favorable circumstances, almost any tree or shrub may be propagated by C., but some only with great difficulty, and soft-wooded trees or shrubs most easily. Nothing is more easy than to propagate willows, fuchsias, currants, gooseberries, etc., in this way; but many other plants, commonly propagated by C., require greater attention on the part of the gardener, warmth, a uniform damp atmosphere, and shade. Some kinds of apple are occasionally propagated by C., especially in warm climates.

CUTTLE-FISH, n. *kŭt'tl-fish* [AS. *cudele*, a cuttle-fish: OE. *cuttle*, a knife—from OF. *coutel*, a knife—from the knife- or feather-shaped bone or shell contained in its body: Ger. *kuttel-fisch;* old Dut. *kuttel-visch*—from *kuttel*, a gut, bowels], (*Sepia* and *Sepiadæ*): genus and family of cephalopodous mollusks of the order *Dibranchiata:* see CEPHALOPODA. The body is oblong and depressed, sac-like, with two narrow lateral fins of similar substance with the mantle. There is an internal shell lodged in a sack on the back part of the mantle, somewhat oval and blade-shaped, being comparatively thick near the anterior end, where it is terminated by a sharp point affixed, as it were, to its general outline; the whole shell is light and porous; it is formed of thin plates with intervening spaces divided by innumerable partitions; and consists chiefly of carbonate of lime with a little gelatinous and other ani-

mal matter, which is most abundant in the *pitragnocone*, or internal harder part of the shell, where also the laminæ and partitions are closer than in the outer part. The eyes are very large, and the head is furnished with eight arms, each of which has four rows of suckers, and two long tentacles expanded and furnished with suckers on one side at the extremity. The animal is the most highly organized of invertebrates. The COMMON C. (*Sepia officinalis*) has a skin smooth, whitish, and dotted with red. It attains the length of a foot or more. It is one of the pests of fishermen; often, together with calamaries, partially devouring the fish which have been caught in their nets. In Scotland, the fishermen call it the O fish. It is not itself easily caught, being very active in making its escape by swimming, and also promptly throwing out its ink to darken the water around it. It is sometimes cast upon the shore, but far more frequently its bone, which is used for making pounce, tooth-powder, etc., for forming molds for small silver castings, for polishing, and for other purposes in the arts; and was formerly used in medicine as a corrective of acidity in the stomach. The ink of the C. furnishes the valuable pigment, *Sepia* (q.v.), which is said by some chemists to contain a peculiar animal principle called *Melanine* [Gr. *melas*, black], and is wonderfully indestructible. Dr. Buckland indeed found the pigment remaining in fossil mollusks akin to the C. to be fit for use, and to make

Cuttle-fish.



Cuttle-fish bone.

excellent sepia, notwithstanding all the unreckoned ages that had elapsed since its secretion by the living organisms.—The eggs of the C. are frequently cast ashore, clustered together like grapes, and are known to the frequenters of the coast as *Sea-grapes*.—The flesh of the C. was esteemed by the ancients. A receipt for making a C. sausage will be found in Athenæus.—Numerous species of C. inhabit different seas.—CUTTLE, n. in OE., one who blackens the character of others; a foul-mouthed person.

CUT-WORM: fleshy, dingy-colored larva of *Agrotis* and kindred genera: common and very destructive in corn, cotton, and tobacco fields, and attacking nearly all transplanted vegetables which it cuts off below or even with the surface of the ground. Sometimes it entirely destroys the grass in mowing lots and pastures; works mostly at night. Remedies: Fall plowing, which exposes the worms to frost; winding paper around the stems of transplanted vegetables; poisoning, by scattering green sods sprinkled with a solu-

tion of Paris green among the plants to be protected (dangerous); digging up and killing the pest wherever indications of its work appear.

CUTTY, a. *kŭt'tĭ* [W. *cwtt*, a little piece (see CUT 1)]: a word used as the first part of a compound, meaning short or small. CUTTY-PIPE, a tobacco-pipe with a short stem. CUTTY-STOOL, in *Scot.*, a small, low, three-legged seat: on such a stool, anciently in the Scottish church, offenders against chastity were compelled to sit while a public reprimand was uttered by the minister.

CUVIER, *kü ve-ā'* or *'kū've-ėr*, GEORGES CHRÉTIEN LÉOPOLD DAGOBERT, Baron: 1769, Aug. 23—1832, May 13; b. Montbéliard, dept. of Doubs, a town which then belonged to Würtemberg. His father was an officer in a Swiss regiment. Having made rapid progress in learning at the Montbéliard gymnasium, C. entered, 1784, the Karlsakademie at Stuttgart. In 1788, he took a situation as private tutor in the family of Comte d'Héricy, near Fécamp, Normandy, where for six years he pursued studies in natural history. Geoffroy St. Hilaire and other eminent Parisian savans, casually becoming acquainted with him, were startled by the novelty and comprehensiveness of his views on zoology, and St. Hilaire induced him to come to Paris, where, 1795, he was appointed prof. in the École Centrale of the Panthéon. Soon C. was made assistant to Mertrud, teacher in comparative anatomy at the Jardin des Plantes, and began that collection in natural history which ultimately became the largest in Europe. In 1796, he was made a member of the National Institute; in 1806, he succeeded Daubenton in the Collége de France; and, in 1802, was made perpetual sec. of the Institute. He gradually rose in the estimation of the emperor, and, in 1808, was commissioned to superintend the institution of academies in the new territories attached to France. Shortly before the fall of Napoleon, C. was admitted into the council of state. The restoration did not deprive him of his honors, but added to them; he was made chancellor of the Univ. of Paris, and, henceforward, received from time to time new rewards for his services to science. After a visit to England (1818), where he was received with great honors, he was, 1819, admitted into the cabinet by Louis XVIII., and, 1826, was made grand officer of the Legion of Honor; but his decided opposition to the royal measures for restricting the freedom of the press lost him the favor of Charles X. Under Louis Philippe, he was made a peer of France 1831, and in the following year was nominated minister of the interior, when he was suddenly attacked with paralysis, of which he died.

It is difficult to give a summary of the merits of C., so various were his attainments, so great was his success in so many departments. He laid the foundation of the now universally recognized method of classification in zoology (q.v.), and raised comparative anatomy (until his time merely a heap of unconnected details) to the dignity of a science. After a long series of patient observations on numerous animals, especially the hitherto little-known or-

der of mollusca, he published (1801–05) his *Leçons d'Anatomie Comparée*, completed by the *Mémoire pour servir à l'Histoire de l'Anatomie des Mollusques* (1816). With admirable sagacity, he applied the principles of his comparative osteology to the remains of fossil vertebrate animals, and opened a field of investigation in which numerous explorers have since successfully labored. His *Recherches sur les Ossements Fossiles des Quadrupèdes* (1821–24) is a mine of information in natural history, and affords the strongest arguments in favor of the theory of a progressive series of animals, advancing from the most simple to the most complex forms of organization. C.'s rare faculty of expressing scientific truths in popular and elegant style was seen in his celebrated *Discours sur les Révolutions de la Surface du Globe et sur les Changements qu'elles ont produits dans le Règne Animal* (latest edition, Paris 1851). This discourse was published as an introduction to the *Recherches sur les Ossements Fossiles.* In concert with Valenciennes, C., 1828, began a *Natural History of Fishes,* founded on the largest ichthyological collection ever made by an individual: it was continued by Valenciennes. The éloges delivered by C. (pub. in the *Recueil d'Eloges Historiques,* 1819) were valuable contributions to the history of science.

In public life, C. was as remarkable for activity as in the quiet work of the study. He never blindly surrendered himself to any party, but at all times gave proof of an honest, sagacious, and resolute character. In his plans for the extension and improvement of national education, he was zealous and indefatigable, as also in his efforts for the welfare of the Protestant Church in France, of which he was a member.—Mrs. R. Lee's *Memoirs of Baron C.* (Lond. 1833); Pasquier's *Eloge de C.* (Paris 1833).

CUVIERA, n. *kô-vĭ-ēr'a* [from Georges *Cuvier* (q.v.)]: genus of *Pteropoda,* with a cylindrical transparent shell, the animals with simple narrow fins. Four recent species are known, from the Atlantic, India, and Australia, and four fossil, the latter from the Miocene.

CUXHAVEN, *kŭks-hä'vĕn* or *kûks'hâ-fĕn:* town of Germany, on the left or s. bank of the Elbe, just where it is lost in the German Ocean. It is about 60 m. distant from Hamburg, to which free city it belongs. C. is a small place, but of importance as the port whence the Hamburg steamers ply when in winter the Elbe is frozen over. The harbor affords good shelter, and is much resorted to by vessels waiting for favorable winds. Pilots for the Elbe are taken in here. Pop. (1880) 2,200; (1885) 4,490.

CUYLER, *kī'lĕr,* Theodore Ledyard, D.D.: Presbyterian clergyman: 1822, Jan. 10— ————; b. Aurora, N. Y. He graduated at Princeton Coll. 1841, and at the theol. sem. 1846. His early pastorates were in Burlington and Trenton, N. J., and in the Market St. Ref. Dutch Ch., N. Y. In 1860, he became pastor of the Lafayette Ave. Presb. Ch., Brooklyn, which greatly prospered through his active pastorate of 30 years. Deafness caused him to resign (1890), whereupon the church appointed him pastor emeritus. He has been a prolific writer for the religious

press; many of his articles have been republished in volumes, and a number of them have been translated into foreign languages.

CUYP, *koyp*, AELBERT: painter: 1605-91; b. Dordrecht; son of Jacob C. He excelled in the painting of cattle grazing or reposing, moonlights, wintry landscapes, still waters with ships, horse-markets, hunts, camps, and cavalry-fights. During his lifetime and long after, his pictures, though in many respects equal to those of Claude, were held in little estimation. Opinion has changed regarding them. One of his still waters, sold 1777 for 416 guilders (abt. $170), brought 12,720 guilders (more than $5,000) in 1844. England is particularly rich in his works. He died at Dordrecht.

CUYP, BENJAMIN: painter, at Dordrecht; nephew of Aelbert Cuyp. He painted biblical pieces in Rembrandt's style, and familiar scenes of country-life. His best works are in the manner of Teniers. His sea-shores have less repute. The dates of his birth and death are unknown, but, from the multitude of his pictures, it is conjectured that he lived to a great age.

CUYP, or KUYP, JACOB GERRITSE, commonly called the Old Cuyp: 1575-1650; b. Dordrecht: painter. His representation of cows and sheep, battles and encampments, are clever, but his fame rests principally upon his excellent portraits. His coloring is warm and transparent: his manner, free and spirited.

CUZCO: department of Peru; subdivided into 11 provinces; lying wholly in the sierra or Andine region of the country, having the coast on the w., and the Montana, or Transandine territory, on the east. It stretches in s. lat. from 13° to 15°, and in w. long. from 70° to 73°; area 156,270 sq. miles. In addition to the city of Cuzco, it has the towns of Abancay and Urubamba. Pop. estimated 438,600.

CUZCO, *kôs'kō:* city in Peru, originally capital of the Incas (in the language of the Incas, says Garcilasso, Cuzco signifies 'navel'), and the centre of an empire, which, besides the territory of the existing republic, comprised Bolivia, most of Ecuador, and portions of Chili and the Argentine Confederation. Cuzco stands on the Guatanai, one of the remotest headwaters of the Amazon; lat. 13° 31′ s., and long. 72° 2′ w., at the e. end of that section of the Andes known as the Knot of Cuzco, 11,000 ft. above sea-level. Notwithstanding its aboriginal name, Cuzco, with the exception of some neighboring ruins, part of which perhaps date beyond the era of the Incas, is really of Spanish origin, being built in the form of a square, and presenting many handsome edifices. It is about 200 m. to the n.n.e. of Arequipa, having its maritime outlet in Islay, the port of that city. The manufactures of the place are cottons, woolens, embroidery, and jewelry. It is fourth in size of Peruvian cities; pop. abt. 20,000. The province of Cuzco, otherwise styled the Cereado, embraces nothing beyond the city itself but the suburb of San Jeronimo.

CWT n. pronounced *hundred weight:* a contr. for hundred weight—*c* first letter of L. *centum*, a hundred —*wt* first and last letters of weight.

CYAMELIDE, n. *sī-ăm′ĕ-līd* [Eng. *cyanic;* and *ammelide*] a white porcelain like mass formed in the preparation of cyanic acid.

CYAMUS, n. *sī′a-mŭs* [L. *cyamos:* Gr. *kuamos*, a bean, the Egyptian bean, *Nelumbium speciosum*]: in *zool.*, typical species of *Cyamidæ*. CYAMIDÆ, *sī-ăm′ĭ-dē*, family of crustaceans, ord. *Læmodipoda*. The species are called whale-lice: see WHALE-LOUSE.

CY AMUS BALÆNA′RUM· see WHALE LOUSE.

CYANAMIDE, n. *sī-ăn′ă-mīd* [compounded of *cyanic* and *amide*]· N. CNH_2 a crystalline, rather unstable substance obtained by the action of ammonia on cyanogen chloride; it melts at 40°C.

CYANATE, n *sī′ă-nāt* [Gr. *kŭănos*, dark-blue]: a salt of *cyanic acid*. CYAN′IC, a. *-ăn′ĭk*, relating to blue—applied to a series of colors having blue as the type. CY′ANIDE, n. *-ă-nīd*, a compound of cyanogen with a metal or a radical.

CYANIC ACID, NCOH, a highly unstable, mobile liquid with a very offensive odor. Prepared indirectly from urea. A considerable number of its *salts* are known, the potassium salts, for instance, being formed from cyanogen (q.v.) and potassium hydroxide. They are used quite largely in the preparation of other chemicals especially of derivatives of *urea* (q.v.).

CYANITE, n. *sī′ă-nīt*, called also DISTHENE, or SAPPARE [Gr. *kuănos*, dark-blue]: mineral of the garnet family, composed of alumina and silica; often occurring crystallized, and generally in broad prisms; sometimes colorless, red, yellow, etc., but frequently of a fine sky-blue, slightly tinged with violet; it is transparent, and sometimes beautifully opalescent. It occurs chiefly in mica-slate, talc-slate, and granite; is found in different parts of Europe, Asia, and America, and is sometimes used as a gem.

CYANOGEN, n. *sī-ăn′ō-jĕn* [Gr. *kuanos*, dark-blue; *gennoa*, I produce], N:CC:N, colorless, highly poisonous gas with a peculiar odor, slightly resembling that of almonds. It melts at −34°C., boils at −21°C, and burns with a purple flame. Cyanogen is formed by passing electric sparks between carbon poles in an atmosphere of nitrogen, by heating silver or mercuric cyanide, or by heating ammonium oxalate. This last method was of great importance in clearing up the constitution of oxalic acid. Cyanogen can be reconverted into ammonium oxalate by treatment with hydrochloric acid, it is, therefore, the *nitrile* of oxalic acid (see CHEMISTRY). An enormous number of cyanogen derivatives are known; they all contain the monovalent radicle, −C:N; some of the more important are *hydrocyanic acid, prussian*

blue, potassium ferrocyanide, potassium cyanide (q. v.). See also NITRILES.

CYANOHY'DRIC AC'ID: see HYDROCYANIC ACID

CYANOMETER, n. *sī'ă-nŏm'ĕ-tĕr* [Gr. *kŭănos*, dark-blue; *metron*, a measure]: instrument for ascertaining the intensity of the blueness of the sky or ocean; a disk divided into sections whose blue tint increases on a graduated scale—the section whose tint is exactly the same with that of the sky seen through it, showing the degree of the sky's blueness.

CYANOSIS, n. *sī'ă-nō'sĭs* [Gr. *kŭănos*, dark-blue]: in *med*, diseased condition arising from a congenital defect in the heart which causes a deficiency of pure arterial blood; characterized by blueness of the skin, or lividity of complexion, with fulness of the capillaries and minute veins, especially of the face and lips: see HEART, DISEASE AND MALFORMATION OF.

CYANOTYPE, n *sī-ăn'ō-tīp* [Gr. *kŭănos*, dark-blue; *tupos*, an impression]: process of taking photographs in Prussian-blue; also the photographs so produced.—*Cyanotype processes* in photography, are those in which cyanogen compounds are employed; they were discovered by Sir John Herschel, and depend for their successful practice on the reduction of a ferric salt to a ferrous salt by the action of light, in the presence of organic matter.

Good paper is immersed in a solution of ferric ammonium citrate of the strength of 40 grains to 1 ounce of water; it is then dried, and exposed—at any convenient time during a fortnight—under a negative, when a picture of a pale brown tint becomes faintly visible upon a yellow ground; it is then brushed over with a solution of potassium ferrocyanide (yellow prussiate of potash), which develops the picture of a deep blue tint; and this may be further deepened by immersion in a solution of carbonate of soda, which has the effect, at the same time, of removing the unaltered ammonium citrate, and permanently fixing the picture. Similar results may be obtained by employing potassium ferricyanide (red prussiate of potash), or a mixture of the ferricyanide and ammonium citrate in which latter case the paper is sensitive as soon as treated with the mixed solutions, and must therefore be dried in the dark. To fix the picture, it is necessary only to wash the water. A subsequent treatment with a weak solution of mercuous nitrate has the effect of apparently removing the whole of the picture. If the mercury salt, however, be perfectly washed away, and the picture dried, and ironed with a very hot iron, it is speedily reproduced in all its vigor.

CYANURIC ACID, n. *sī'ă-nū-rĭk* (Gr. *kŭănos*, dark blue; *ouron*, urine): $C_3N_3(OH)_3$, formed, together with ammonia, by heating urea. It crystallizes with 2 volumes of water (not shown in the above formula) in large rhombic prisms, and is chiefly interesting from its relation to other more complex compounds. It is a tribasic acid.

CYAR, n. *sī′âr* [Gr. *kuar* a hole, especially of a needle] the orifice of the internal ear.

CYATHAXONIA, n. *sī-a-thăks-ō′nĭ-a* [L. *cyathus;* corals, typical of the family *Cyathanonidæ*. It has a styliform columella. Its range is from the Silurian to the Carboniferous period. CYATHAXONIDÆ, *sī-a-thăks-ō′nĭ-dē*, family of rugose corals.

CYATHEA, *sī-ăth′ē-a*, or *sī-ā′the-a:* genus of ferns (q.v.) of the sub-order *Polypodiaceæ*, containing many species, natives of tropical and sub-tropical regions, both of the old and of the new world. They are tree-ferns, and some have lofty stems and gigantic fronds they are generally characterized by great gracefulness and beauty. *C. arborea*, sometimes designated the Common Tree-fern, is a native of the W. Indies, Brazil, etc. The fronds are bipinnate, the pinnules deeply pinnatifid. The roots of *C. medullaris*, a species found in New Zealand, contain much starch, and are baked and used as food.

CYATHIFORM, a *sī-ăth′ĭ-fawrm* [L. *cyăthus*, a cup or small ladle; *forma*, shape]: in *bot.*, cup-shaped. CYATHOPHILLIDÆ, *sī-a-tho-fĭl′lĭ-dē* [Gr. *phullon*, a leaf]: in *geol.*, cup-corals, the largest and most important family of the rugose corals. CYATHOPHILLI′NÆ, *-lī′nē*, sub-family of CYATHOPHYLLIDÆ. CYATHOPHYLLUM, n. genus of fossil stony cup-corals—the simple turbinated forms being familiarly known by the name of 'petrified rams' horns;' a rugose coral of the palæozoic period. They have a simple or branched polyparium, internally lamellated, the lamella having a quadripartite arrangement. The older portions are cut off by transverse 'tables' or septa, and the base of the stem is often supported by root-like processes. This genus was abundant specially in the Devonian measures, 36 species having been described from them. It made its first appearance in the Silurian seas, and perished at the close of the carboniferous epoch.

CYATHOCRINUS, n. *sī-a-tho-krī′nŭs* [L. *cyathus*, cup; Gr. *krinon*, a lily]: type of the family *Cyathocrinidæ*. Its range is from the Silurian to the Permian, especially the Carboniferous and the Permian. CYATHOCRINIDÆ, family of *Crinoidea*.

CYB′ELE: see VESTA.

CYBIUM, *sĭb′ĭ-ŭm:* genus of fishes of the family *Scomberidæ* (q.v.), having a long first dorsal, detached finlets, an elongated body, a keeled tail, no pectoral cuirass, and no armature on the lateral line, compressed trenchant teeth in the jaws, and very numerous villiform teeth in other parts of the mouth. A number of species are natives of the seas of the E. Indies, some esteemed for the table; and one species C. *Commersoni*, is used in a dried as well as in a fresh state; and in a dried state is, to some extent, an article of commerce in India.

CYCADACEÆ, *sī-ka-dā′sē-ē*, or CYCADEÆ, *sī-kā′dē-ē:* nat. ord. of exogenous plants, consisting of small trees and

shrubs, somewhat resembling palms in their general appearance, but much more nearly allied to *Coniferæ* (pines, firs, etc.) in their botanical characters; cycadaceæ being one of the few orders placed by Lindley with *Coniferæ* in his class of *Gymnogens* (q.v.). The stems are generally simple, and either cylindrical or short and spheroidal; sometimes they are branched by successive forkings; they are much marked with scars of leaf-stalks; they consist internally of a mass of pith traversed by woody bundles, and rings of woody matter. The leaves are large and pinnated, and unfold by unrolling, like the fronds of ferns. This curious and beautiful order contains about 50 known species, natives of tropical and sub-tropical countries. None are found in Europe. They all have a mucilaginous nauseous juice, but with this there is often much starch, which, being separated, forms a wholesome food. A kind of sago is made in Japan from the cellular substance which occupies the interior of the stem of *Cycas revoluta*, in the Eastern Peninsula from *C. pectinata*, and in the Moluccas from *C. circinalis*. From these species, which are trees 30–40 ft. high, there exudes a transparent gum, resembling tragacanth in its properties. Their nuts also are eaten, after being fermented and roasted. The large seeds of *Dion edule* afford a kind of Arrow-root in Mexico; and a starchy substance, called sometimes Arrow-root, sometimes Sago, is obtained from *Zamia pumila* and other dwarf species in the W. Indies. Caffer Bread (q.v.) belongs to this order. Fossil cycadaceæ are numerous, and occur in some of the oolitic and other strata in England.

CYCADACEOUS, a. *sĭk′ă-dā′shŭs* [L. *cycas*, a kind of palm; *cycădis*, of a palm: Gr. *kukas*, a kind of palm]: pertaining to the natural order of CYCADS, *sī′kădz*, or small palm-like trees, the CYCADACEÆ, *sĭk′ă-dā′shĭ-ē*, from the pith of some of which a kind of sago is obtained. CYC′ADITES, n. plu. *-dīts*, fossil plants from the oolite and chalk, apparently allied to the existing cycads.

CYCAS, n. *sī′kăs:* typical genus of the order *Cycadaceæ* (q.v.).

CYCHLA, *sī′klâ:* genus of fishes of the family *Chromidæ* (included by Cuvier in the *Labridæ*, or Wrasse family), of which many species occur in the rivers of tropical America. They have small and crowded teeth, forming a large band. Some are reckoned among the finest fishes for the table in Brazil and Guiana. They are also remarkable for beauty and brilliancy of color. Some of them are large, and some small. Allied to this genus is *Chromis*, of which one species, *C. Niloticus*, Egyptian *Corycina* of the ancients, inhabits the Nile, and is reckoned the best fish in Egypt. It attains the length of two feet.

CYCHRUS, n. *sīk′rŭs* [Gr. *Kuchreus*, a myth, name]: genus of predatory beetles, family *Carabidæ*.

CY′CLADES: see ARCHIPELAGO and GREECE.

CYCLADIDÆ, n. *sī′-klăd′ĭ dē* [L. *cyclas*, and suf. *-idæ*]: family of *Conchifera*, section *Siphonida*, and that portion of it in which the pallial line is simple.

CYCLAMEN, n. *sĭk'lă-mĕn* [L. *cyclămīnos;* Gr. *kuklamīnos*, the plant sow-bread—from Gr. *kuklos*, a circle, referring to the round leaves]: in *bot.*, genus of plants of the nat. ord. *Primulaceæ*, having a wheel-shaped corolla, with a long reflexed limb, and flower-stalks twisted spirally downward after flowering. The species are herbaceous perennials, not numerous, and natives chiefly of the s. of Europe. They have turnip-like, partly subterranean stems, very acrid, nevertheless greedily eaten by swine, and the plants are accordingly often designated SOW-BREAD. They are drastic and emmenagogue. A very stimulant ointment is prepared from them, which externally, applied by friction, expels intestinal worms from children.. Several of the species are favorites in flower-gardens, producing beautiful and fragrant flowers in early spring.—The active properties of the species of Cyclamen have recently been found to depend upon a peculiar principle called *Cyclamine*, which produces effects on the animal system similar to those of Curare (q.v.).

CYCLANTHEÆ, n. *sī-klăn'thē* [mod. L. *cyclanthus;* and suf. *-eæ*]: one of the two tribes into which the *Pandanaceæ* are divided. CYCLAN'THUS, *-thŭs* [Gr. *kuklos*, a circle; *anthos*, a flower, in allusion to the arrangement of the flowers]: typical genus of the tribe *Cyclantheæ*. The species are from tropical America.

CYCLAS, n. *sīk-las* [L. *cyclas;* Gr. *kuklas*, a woman's dress with a border all round it]: a rich stuff manufactured in the Cyclades; also called Ciclatun or Ciclatoun; a garment made of this stuff; in *zool.*, genus of mollusks typical of the family *Cycladidæ*.

CYCLE, n. *sī'kl* [F. *cycle*—from Gr. *kuklos*, a circle, an orb: W. *cylch*, a circle]: a wheel; a round of years, after which the same course begins again; a period; the revolution of a certain period of time which finishes and begins again in a perpetual circle: V. to recur in circles. CYCLING, imp. *sī'klĭng*. CYCLED, pp. *sī'kld*. CYCLIC, a *sī'klĭk*, pertaining to a cycle or circle; also CY'CLICAL, a. *-klĭ-kăl*. CY'CLAS, n. *-klăs*, in *zool.*, a genus of fresh-water bivalves having oval, transverse, equivalved shells. CYCLE OF THE MOON, or *golden number*, a period of 19 years, at the end of which the new and full moons occur again on the same days of the month. CYCLE OF THE SUN, a period of 28 years. CYCLE OF INDICTION, a period of 15 years.

CY'CLE, in Chronology: an interval of time in which certain phenomena always recur in the same order. Cycles have arisen chiefly from the periods of revolution of the earth and other celestial bodies not being commensurable. One unit of time is the day of 24 hours, being the period of revolution of the earth round its axis. But neither the year—the period of the earth round the sun—nor the month—the period of the moon round the earth—can be measured by days, or even by hours, so exactly as not to leave fractions. Cycles have been invented to swallow up these fractions of time in whole numbers

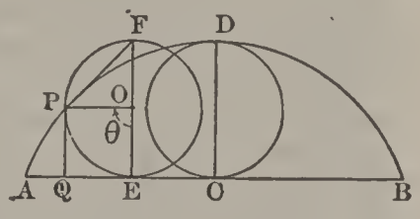
expressing days, in such a way that after a certain number of revolutions of the body whose period has been put against that of the earth on her axis, the body shall at last occupy the same place in the heavens and calendar as it did when the cycle commenced. For the more important of the numerous cycles or periods of this kind that have been invented, see their specific titles: see INDICTION: METONIC CYCLE: PERIOD: GOLDEN NUMBER: ETC.

CYCLING, n. *sīk'lĭng:* practice or exercise of riding on bicycle or tricycle. Vehicles more or less like the bicycle in outward appearance, but differing totally in mode of propulsion, are described in publications of the latter half of the 17th c., and improvements were made at intervals; but Michaux, wheelwright, of Paris, appears to have been the first to contrive a crank-driven bicycle, 1866: Michaux's bicycle was of wood. Lallement, one of Michaux's workmen, coming to the United States, 1867, associated with James Carrol, of Ansonia, Conn., and patented an improved bicycle. Other mechanicians having turned their attention to the problem of bicycle construction, many different types of machine were invented and existing types improved, till now perfection of mechanism seems reached. (see BICYCLE.)

In 1893 a firm of Boston bicycle-makers exhibited a special machine whose total weight was only 11 lbs. 11 oz.; the wheels were 27 in. high; the pneumatic tires weighed only 22 oz. the pair. This machine was ridden repeatedly 14 m. over common roads by a rider weighing 175 lbs., and showed no weakness.—The years 1868-70 witnessed the rise and decline of a moderate bicycle furore in the United States; everywhere riding-schools sprang up, and the rider on his velocipede, as the wooden machine was first called, was frequent on village streets. But then cycling lost favor, and the bicycle almost disappeared till 1876 In that year two expert bicycle-riders brought over racing bicycles from England and gave public exhibitions of their art and of the capabilities of the machines throughout the country; the example of private citizens, too, served to revive interest in the vehicle; in 1887, a law student in Boston, owner of an improved bicycle of English manufacture, introduced it to the notice of a number of his friends, who imported English-made wheels: that was the beginning of bicycle clubs in this country. Thus a demand for machines sprang up, and the American manufacture of modern bicycles was the result. The first contract for the manufacture of such machines in this country was given to the Weed Sewing Machine Co. of Hartford, Conn., 1888, July: it called for manufacture of 300 machines of the original 'safety' pattern. There are now immense establishments for manufacture of a variety of admirable machines in a number of cities in the west and in the east. The large cities in the United States which afford to cyclists the best opportunities for exercise on 'the wheel,' in the way of fine drives, park roads, and asphalted pavements, are Chicago,

Washington, Buffalo, Boston, New York, and St. Louis. Favorite touring districts are the beautiful towns around Boston, the Lancaster Pike from Philadelphia to Reading, the Orange (N. J.) dist., and the Berkshire (Mass.) dist. See BICYCLE: TRICYCLE: WHEELMEN'S ASSOCIATIONS.

CYCLOID, n. *sī'kloid* [Gr. *kuklos*, a circle; *eidos*, form]: a geometric curve traced out by a point in the circumference of a circle rolling upon a straight line, as the path described by a nail in the rim of a carriage-wheel running along a straight line. This curve, which was discovered by Galileo (1615), is one of the most interesting of all known curves on account of both its geometric properties and its connection with dynamics. It is the curve of quickest descent (*Brachistochrone*) under gravity between two points P and Q not in the same vertical line. Moreover, a particle under gravity descends the arc of an inverted cycloid to its lowest point in the same time, no matter from what point of the arc the descent (from rest) begins. On this account the cycloid is called the *isochronous curve*. The property is utilized in the cycloidal pendulum, which is so suspended as to swing in a cycloidal arc.



The line AB is called the base of the cycloid; its length is equal to the circumference $2\pi a$ of the generating circle. The axis CD of the cycloid is equal to the diameter $2a$ of the circle. In any position EPF of the circle, AE = arc EP = $a\theta$, and the abscissa $x = AQ = AE - QE = a\theta - a \sin \theta$. The ordinate $y = QP = a - a \cos (1)\ \theta$. The equations of the cycloid are therefore $x = a\ (\theta - \sin\ \theta)$, $y = a\ (1 - \cos\ \theta)$, x and y being measured from the origin A, and θ being the angle through which the generating circle has turned. The total length of the arc of the cycloid is $8a$; its area is $3\pi a$, i.e., three times the area of the generating circle.

Epicycloids and *hypocycloids* are generated by a point on the circumference of a circle which rolls on the outside or inside of a fixed circle. *Trochoids* are described by points attached to the rolling circle but not on its circumference. The general name *roulettes* is given to curves described by points attached to any kind of curves which are made to roll on any fixed curves.

CYCLOID, a. applied to the scales of certain fishes, which have a circular or elliptical outline with an even margin. CYCLOI'DAL, a. *-dăl*, pertaining to. CYCLOI'DEANS, n. plu. *-kloy'dĭ-ănz*, or CYCLOID FISHES, in the system of Agassiz, the fourth order of fishes, having *cycloid* scales.

CYCLOMETER, n. *sī-klŏm'ė-ter:* instrument for recording the revolutions of a wheel, as of a bicycle; called also *odometer*.

CYCLOMETRY, n. *sī-klŏm'ĕtrĭ* [Gr. *kuklos*, a circle; *metron*, a measure]: the art of measuring circles or cycles.

CYCLONE, n. *sī'klōn* [Gr. *kuklos*, circle]: extensive storm. The definition may be reduced to this, because all such storms, covering from a few hundred to many hundred miles, have rotating winds, and because the rotation is noticeable only as change of wind to different points of the compass. The term is often popularly applied to tornadoes; but science is now restricting the word Tornado (q.v.) to the violent whirls that (in N. Amer.) occur on the s.e. border of cyclones, and are manifested usually by a funnel cloud. The term whirlwind also is now restricted: it is scientifically used for lesser whirls, visible on a small scale in dusty roads, and on a larger scale, sometimes dangerous to life, in dry deserts; these, unlike tornadoes, are not appendages of cyclones, but are referred to eddies between currents of air or to local ascent of hot air taking a rotary motion. Water-spouts are tornadoes, or else violent whirlwinds, at sea; but inland the so-called water-spouts are simply extraordinary falls of rain. Cyclones are accompanied by considerable fall of barometer; tornadoes by little, if any, except that which belongs to the parent cyclone; whirlwinds, unless it be on the largest scale, by none. Cyclones, or storms proper, come on with warm, moist air, and more or less rain, extending from the centre of disturbance for some hundreds of miles forward in the direction in which the storm is advancing: in N. Amer., the n.e. quadrant of the great circuit of the storm is humid, with high winds and heavy clouds; the s.e. quadrant has the most heat and moisture, hence possibilities of unusual disturbance—the tornadoes, however, often occurring together with thunder-storms, after a clear, oppressive day, outside of the rainy district; the s.w. quadrant of the C. shows clearing weather and cooler; the n.w., brisk, clearing, cold winds. The C. may be a great circle—but usually an ellipse, more or less irregular, the longest axis in the direction of progress. Every area of low barometer may be regarded as a germ of C., which may or may not be developed into a C. proper. The area of high barometer preceding or following, with 'settled' weather, is termed an anti-cyclone: and the idea has been entertained that this, with its denser, calmer air, has power sometimes to retard or arrest a C., as during the week of 'blizzard' in N. Y. 1888—also that the anti-cyclones are likely to plant themselves off the Atlantic coast, prolonging many storms; but this needs discussion. In the n. hemisphere, and explained by the effect of the rotation of the earth, the great circuit of cyclonic wind moves from right to left—opposite to the motion of the hands of a watch. In the s. hemisphere, it is from left to right. In the centre of disturbance there is a calm. Let any one put his pencil-point anywhere on the face of a watch, outside of the centre, and he can readily decide the direction of the wind as represented at the point touched: and hence, for example, in the n. hemisphere, if at the beginning of a storm the

wind is s.e., he can know in a general way that the centre of the storm will pass s. of him; if s.w., n. of him. A simpler rule is—with one's back to the wind, the centre is to the left. Local deflections, as in valleys, would need to be remembered, however; and there is a lack, at some points, of perfect accordance with theory, as shown by the arrows on signal-office daily charts. Moreover, the wind, even if the storm be circular, does not move in a circle strictly, but inclines somewhat toward the centre of the storm, spirally. The rate of the wind, outside of the central calm, may reach 40 m. an hour, when it is called a gale, or 60 m., when it is an exceptionally heavy storm: in the tropics, it is reported as sometimes 150 m., in a severe hurricane; and such tropical severity of cyclonic wind defines the word hurricane. The pressure of the wind at 40 m. is estimated at 8 lbs. the sq. ft.; at 60 m., 18 lbs.; at 80 m., 32 lbs.; at 100 m., 50 lbs. The force of the wind is proportioned to the greater or less difference of barometer in the inner and outer portions of the storm area. The progressive motion of cyclones is 2 to 40 m. per hour, most rapid in the tropics. They may change their course, increase or diminish: and if the area of low barometer contracts, it is a sign that the storm is declining; but an expansion, with rising barometer, is also a decline. If the temperature begins to rise soon and markedly after the storm has passed, a second storm may be expected shortly. The rainfall is generally proportioned to the suddenness and extent of the barometric depression at the place where it falls. In the West Indies region, where the Atlantic-coast cyclones originate, the beginning is narrow and violent; and the storm expands and diminishes as it moves northward, unless re-enforced by peculiar atmospheric conditions or by junction with other storms. Cyclones enter the interior of the United States from the Gulf of Mexico, or the Oregon and Washington coast, and from n. of Dakota. Reaching the interior, they usually move n.e., and, like those of the Atlantic coast, pass off to sea from the New England coast or the Gulf of St. Lawrence. It is a great neglect on the part of newspapers, which are unstinted in expense for trivial news, that they do not give weather reports at points reaching to the Rocky Mts. and to the Gulf; as it is, one cannot judge of coming weather except for the day, or for one day ahead. Light, feathery clouds at great height (cirrus), gradually rising temperature, and southerly or easterly winds, are usual precursors of cyclones; but the conditions may not ripen into development. Many of our storms cross the Atlantic and strike the coast of Europe. Those of Europe follow the same general n.e. course—except those in the Mediterranean region, which incline toward the s., seemingly as a result of a wide inrush toward the rising hot air of Sahara. Except in the case of eddying whirls between two currents of wind, the general cause of cyclones, tornadoes,

and whirlwinds is the heating of air near the surface of the earth, the lighter hot strata at length breaking upward through the higher, colder, denser. Where the break occurs, the uprush assumes a rotary motion, as in the case even of a slender string of water from the spout above a watering-trough: the slightest retarding or disturbing influence on any side will compel a fluid to revolve, if it be not in a fixed bed or conductor. The uprush of air produces an inrush from all sides, which participates in the spiral upward movement; and it is the spreading out of the risen warm air, containing moisture condensed in the high cold region, which produces the precursor cirrus clouds, as, on a less scale, the upper advanced sheet of cloud above a thunder-storm or tornado. The cause of all storms, with its more limited action, is essentially the same as that which produces a world-wide continuous circulation of upper and under currents between the hot tropics and the cold arctics (in low latitudes forming regular trade-winds)—the hot air rising and flowing off, while the cold air moves in the reverse direction, to take its place.

The theory of storms has been gradually developed in scientific papers, and the theories of Espy, Redfield, Reid, Dove, etc., are superseded. Of the different theories hitherto proposed, we need refer only to the rotatory and the centripetal theories. The rotatory, commonly called the cyclonic theory, was proposed by Piddington, and has since been elaborated by Redfield, Reid, Dove, and others. By this theory, storms are considered as revolving round an axis either upright or inclined to the horizon, while the body of the storm has a progressive motion over the surface of the globe; the barometric depression, as caused by the centrifugal force, driving the air from the centre to the circumference of the storm. Dove, certainly the ablest advocate of this theory, holds that cyclones are formed when two atmospheric currents, the equatorial and polar, flow side by side, they being, as it were, the eddies formed at the line of junction. To this theory, several objections may be urged. Observations from the numerous observatories recently established in Europe and America in no case exhibit a true cyclonic movement of the winds round the centre of the storm—that is, they do not rotate in circles returning on themselves, even when the barometric depression is deepening and the storm expanding, but invariably exhibit, with the rotatory motion, a constant tendency to blow in upon the centre of the lowest pressure. Hence it is clear that the barometric depression is not caused by the centrifugal force of the storm. The same may be shown from theory; for, though the wind were to blow round a circle 400 m. in diameter at the rate of 70 m. an hour, the centrifugal force would depress the barometer at the centre only $\frac{1}{200}$ in., whereas half an inch or even a whole inch of depression often occurs. Again, if cyclones arose from the flowing of the polar and equatorial currents side by side, the rotatory motion would not

always be in one direction, but would be determined by the relative position and strength of the two currents. All the facts of the rotation of the wind are explained when it is considered as caused by air-currents flowing toward a low barometer along the globular surface of the earth rotating eastward.

The rotatory character of storms has been denied by Espy, who maintains that the wind blows from every quarter toward the centre of the storm, and that the central depression is caused by the development of heat which occurs whenever the vapor of the atmosphere is condensed into cloud or rain; the heat thus developed rarefying the surrounding air, and causing an upward current. The most valuable part of this theory lies in directing the attention of meteorologists to the heat of condensation, which must act an important part in the movements of the atmosphere. It is, however, insufficient, since it leaves some important points unexplained Thus, more heat being set free when vapor is converted into snow than rain, a greater depression ought to follow a fall of snow than of rain, which is not found to be the case; it leaves unexplained also the appearance of high pressures, sometimes suddenly appearing on the scene, and seeming to divert the storm from its course, or to drive it before them. But the weak point of this theory is the centripetal direction of the winds. Espy worked from imperfect data, and, never being able to lay down the iso-barometric lines, he could only guess at the true centre of the storm; further, he was misled by a peculiar characteristic of American storms, which being generally in the form of rather elongated ellipses moving *eastward*, many of the winds blow directly to the centre, or nearly so.—See METEOROLOGY; HURRICANE; TYPHOON; WHIRLWIND; STORMS.

CYCLOPE'AN ARCH'ITECTURE, or CYCLOPEAN MASONRY: denoting a construction or a wall of large, irregular stones, unhewn and uncemented, The term originated in Greece, where structures of this kind were fabled to have been the work of the Cyclopes, or one-eyed giants. The walls of Tiryns, near Nauplia—alluded to by Homer—are an example of the ruder style of Cyclopean masonry. They are of irregular unshapen stones, from 6 to 9 ft. long, from 3 to 4 ft. wide, and from 2 to 3 ft. thick; the interstices are filled up by small stones, but no mortar is used. The walls of Mycenæ and of Epirus are examples of more advanced Cyclopean architecture: here, the blocks, though irregular in size and shape, are fitted carefully to each other, showing close joints and a smooth surface. These structures are now commonly believed to have been reared by the Pelasgians (q.v.), probably more than a thousand years before the Christian era. They are found in Greece, Italy, and Asia Minor.

The next stage of Cyclopean masonry shows an approach to horizontal courses, as in the walls of several towns in Greece, and of some in Etruria. Lastly, the name of

Cyclopean work is applied, perhaps not quite accurately, to a kind of masonry which obtained among the Etruscans (q.v.), where the blocks are both squared and laid in horizontal courses, but are not cemented. In some cases —as in the walls of Cosa, in Tuscany, believed to have been first a Pelasgian, then an Etruscan, city—the lower part is of irregular polygonal blocks, the upper part of squared stones in horizontal courses. In at least one instance—a wall in the Peloponnesus—a foundation of excellent ashlar is surmounted by irregular polygonal blocks of the usual Cyclopean type.

Masonry partaking more or less of the Cyclopean character is seen in Persepolis, and elsewhere in Asia, in several parts of w. Europe, and in some parts of America. The walls of Cuzco, and the ruins of what is called the house of Manco Capac, on an island in the lake of Titicaca, in Peru, are interesting examples of the Cyclopean architecture of the New World. Instances of Cyclopean work on a smaller scale are found in the British Islands, in the walls of the primitive 'duns' or hill-forts, or in the 'cashels' or precincts of early religious houses. Among Irish examples are the Grianan of Ailech, the Giants Sconce, near Coleraine, and the Rock of Cashel. Among Scotch instances are the ruins on St. Columkille's Island, near Migsted Skye.

CYCLOPEAN EYE: a name adopted from Greek mythology to express the fact that in normal individuals the center of the field of vision is not located in one or the other of the two eyes, but rather at a point between the two eyes. From this point the line proceeds around which all visual space is recognized as arranged.

CYCLOPEDIA, or CYCLOPÆDIA, n. *sī′klō-pē′dĭ-ă* [Gr. *kuklos*, a circle; *paideia*, learning, instruction]: book or series of volumes of universal knowledge; a book containing treatises on every branch of knowledge, arranged in alphabetical order: see ENCYCLOPEDIA.—CYCLOPEDIC, a. *sī′klō-pē′dĭk*, of or pertaining to a cyclopedia.

CYCLÓPES, *sī′klō-pēz*, a race of giants in the mythology of Greece. The earlier mythology makes them the sons of Uranus and Ge. (Heaven and Earth). They belonged to the Titans, were three in number—Arges, Steropes and Brontes—and had only one eye, situated in the middle of their forehead. They were cast into Tartarus by their father, and again by Cronus, but being released by Zeus provided him with thunderbolts, and became his ministers. They were slain by Apollo for having furnished Zeus with thunderbolts to kill Asclepius. Wholly different from these are the sons of Neptune, of whom Polyphemus was the chief. They are described in the Odyssey (ix. 106, et seq.) as uncouth giants, supporting themselves by the breeding of cattle. According to Homer they resided on the west side of Sicily. A later tradition describes the Cyclopes as the servants and assistants of Hephaistus (Vulcan), engaged in making the armor and metal ornaments for gods and heroes. The name

Cyclopes is also given to a Thracian tribe of giants. They were named from their king Cyclops.

CYCLOPHORUS, n. *sī-klŏf′ĕr-ŭs* [Gr. *kuklos*, a circle; *phoros*, bearing]: genus of gasteropodous mollusks, family *Cyclostomidæ* (q.v.).

CYCLOPS, n. sing. or plu. *sī′klŏps*, also Cyclopes, n. plu. *sī-klō′pēs* [Gr. *kuklōps*, or *kuklōpa;* L. *cyclops*, or *cyclōpem*—from Gr. *kuklos*, a circle; ops, the eye]: in *Greek myth.*, giants, described as huge misshapen monsters, having but one eye, and that in the middle of the forehead. They were of three kinds. 1. The Homeric Cyclops, a wild, lawless, gigantic race inhabiting the sea coasts of Sicily, most prominent of whom is Polyphemus (q.v.). Although Homer does not directly call them one-eyed, yet he expressly terms Polyphemus such, and the later poets attribute his peculiarity to the rest. 2. The three Cyclops mentioned by Hesiod—Brontes, Stereopes, and Arges—each having one eye in the middle of his forehead; these were sons of Uranus and Gæa, belonged to the race of Titans, and forged thunderbolts for Zeus. Hurled into Tartarus by their father, but delivered by their mother, they helped Kronos to usurp the government of heaven. Kronos, however, in his turn, threw them back to Tartarus, from which they were again released by Zeus, whose servants they now became. Finally they were slain by Apollo, because they forged the thunderbolt with which Zeus killed Asclepius. Later tradition placed their workshop in Mount Etna, or in the volcanoes of Lemnos and Lipari, and made them the slaves of Hephæstus. 3. The Cyclops mentioned by Strabo, as a people who had come from Thrace or Lycia to Argolis, and were distinguished for their skill as builders. Their constructions are known as the Cyclopean walls, and many of them still exist in parts of Greece and Italy. The statement of Strabo is quite untrustworthy. More probably the so-called Cyclopean walls were built by some ancient race, perhaps the Pelasgians (q.v.), at a period long before the historical civilizations of Greece and Rome. Cy′clope′an, a. *-klō-pē′ăn*, pertaining to the Cyclops; vast; terrific; applied to those vast remains of anc. architecture which consist of large unhewn masses of stone fitted together without mortar. Cyclop′ic, a. *-klŏp′ĭk*, pertaining to the Cyclops; savage; gigantic.

CY′CLOPS: genus of minute entomostracous crustaceans of the order *Branchiopoda* (q.v.), having a soft and rather gelatinous body divided into two portions, one consisting of the head and thorax, the other forming the tail. There is only one eye, situated in the middle of the forehead, and generally of a bright crimson color, sparkling like a gem when the animal is viewed through a microscope. The species of Cyclops are numerous; they inhabit both the sea and fresh waters, generally residing among or upon aquatic plants. They are extremely active, and dart about with great rapidity.

CYCLOPTERIS, n. *sī-klŏp'tér-ĭs* [Gr. *kuklos*, a circle; *pteris*, a fern]: in *geol.*, a genus of palæozoic ferns having their leaflets of a round shape.

CYCLOP'TERUS: see LUMPSUCKER: SUCKING FISH.

CYCLORAMA, *sī-klō-rā'mâ:* series of views, which, being wound round cylinders, are unrolled to pass in consecutive order before the spectator, so as to produce the effect of motion on his part, as when the banks of a river are seen from a steam-boat, or the country from a railway.

CYCLOSIS, n. *sī-klō'sĭs* [Gr. *kuklōsis*, a surrounding, a circulation—from *kuklos*, a circle]: name designating certain still very imperfectly understood movements of the contents of cells in plants—formerly supposed to be a partial circulation of the juices. As they have been observed in plants of the most different natural orders, it is presumed that they prevail throughout the vegetable kingdom.

CYCLOSTOMIDÆ, n. *sī-klŏs-tŏm'ĭ-dē* [Gr. *kuklos*, a circle; *stoma*, a mouth]: family of gasteropodous mollusks, ord. *Pulmonifera*, section *Operculata*. CYCLOSTO'MA, n *-tō'ma*, typical genus of the *Cyclostomidæ*.

CYCLOSTOMOUS, a. *sī-klŏs'tō-mŭs* [Gr. *kuklos*, a circle; *stoma*, a mouth]: having a circular mouth or aperture for sucking, among certain fishes, as the lamprey. CYCLOSTOME, n. *sĭk'lŏs-tōm*, a fish with a mouth formed for sucking. CYCLOSTOMI, n. plu. *sī-klŏs'tŏ-mī*, also CYCLOSTOMATA, a division of the vertebrates, including the hag fishes and lampreys: see LAMPREY: CARTILAGINOUS FISHES: ZOOLOGY (Table).

CYCLOTELLA, n. *sī-klo-tĕl'la* [Gr. *kuklos*, a circle; L. dim. suf. *-ella*]: genus of *Diatomaceæ*, in which the valves are circular, flat, depressed, or undulated, striated and marked with dots or depressions arranged in radiating rows.

CYCLOTUS, n. *sī-klō'tŭs* [Gr. *kuklos*, a circle; *ous* gen. *ōtos*, the ear]: sub-genus of *Cyclophorus* (q.v.). There are 44 known recent species, from tropical America, s. Asia, etc.

CYDER, n. *sī'dėr:* for CIDER, which see.

CYD'NUS: river in Cilicia: see TARSUS.

CYDO'NIA: see QUINCE.

CYESIOLOGY, n. *sī-ĕz-ĭ-ŏl'o-jĭ* [Gr. *kuēsis*, conception pregnancy; *logos*, a discourse]: the science which concerns itself with gestation.

CYGNET, n. *sĭg'nĕt* [OF. *cigne*, a swan—from L. *cygnus;* Gr. *kuknos*, a swan]: a young swan. CYGNET-ROYAL, in heraldry, a swan gorged with a ducal coronet, having a chain thereunto affixed, and reflexed over its back.

CYG'NUS: see SWAN.

CYG'NUS: constellation in the n. hemisphere, between Lyra and Cassiopeia: see STARS.

CYLICHNA, n. *sī-lĭk'na* [Gr. *kulichnē*, a small cup, a dish for food]: genus of gasteropodous mollusks, family *Bullidæ:* see BULLA.

CYLINDER, n. *sĭl'ĭn-dẽr* [F. *cylindre*—from L. *cyl'indrus;* Gr. *kul'indros*, a roller] a roller; a long rounded body of uniform diameter. Cylinder, in *geom.*, denotes a genus of solid figures, of which there may be endless species. The most common kind of cylinder is that generated by the revolution of a rectangular parallelogram about one of its sides, which line is called the axis of the cylinder. But in order to embrace all varieties of cylinders we must generalize the mode of generation. A cylinder, then, is a solid generated by a line which moves parallel to itself while one end traces upon a plane any curve whatever. When the position of the generating line is at right angles to the plane the cylinder is *right;* when not, it is *oblique*. If the curve traced is a circle, and the line perpendicular to the plane, the cylinder is a *right circular cylinder*, etc. In all cases the content of the cylinder is found by multiplying the number of square units in the base by the number of linear units in the altitude, which is the perpendicular distance between the two ends. The area of the convex surface is equal to a rectangular parallelogram whose base is the circumference of the end, and its height the length of the generating line. To this must be added the areas of the two ends, to get the whole surface of the cylinder. CYLINDRIC, a. *sĭ-lĭn'drĭk*, or CYLIN'DRICAL, a. *-drĭ-kăl*, pertaining to; having the form of a cylinder. CYLIN'DRICULE, n. *-kūl*, a small cylinder. CYLIN'DRICALLY, ad. *-kăl'lĭ*. CYLINDRICITY, n. *sĭl'ĭn-drĭs'-ĭ-ti*. CYLINDRIFORM, a. *sĭ-lĭn'drĭ-fawrm* [L. *forma*, shape]: in the form of a cylinder. CYLINDROID, n. *sĭl'ĭn-droyd* [Gr. *eidos*, resemblance]: a cylinder having its ends elliptical. CYLINDRENCHYMA, n. *sĭl'ĭn-drĕng'kĭ-mă* [Gr. *engchuma*, juice, the substance of organs—from *ĕngchūō*, I infuse]: in *bot.*, plant tissue made up of cylindrical cells.

CYLINDRELLA, n. *sĭl-ĭn-drĕl'la* [dim. of L. *cylindrus*, cylinder]: genus of pulmoniferous gasteropods, called in English Cylinder Snails.

CYMA, n. *sī'mă*, or CYME, n. *sīm* [Gr. *kuma*, a wave]: in *arch.*, a molding whose contour resembles that of a wave, being a hollow and a round conjoined; an ogee: when hollow in the upper part, it is termed cyma recta; when hollow in the lower part, cyma reversa. CY'MOID, n. *-moyd* [Gr. *eidos*, resemblance]: formed like a cyma.

CYMAPHEN, n. *sī'ma-fĕn* [Gr. *kuma*, a wave; *phainō*, I show]: an apparatus in a telephone for receiving transmitted electric waves.

CYMAR, n. *sĭ-mâr* [F. *simmake*, a gown—from It. *zimarra*]: a slight covering; a scarf; also SIMAR.

CYMA'TIUM: see ENTABLATURE.

CYMBA, n. *sĭm'ba* [L. *cymba;* Gr. *kumbē*, a boat, a skiff]: boat-shell, a genus of gasteropodous mollusks, family *Volutidæ*.

CYMBAL, n. *sĭm′băl* [OF. *cimbale;* F. *cymbale*—from L. *cymbălum;* Gr. *kumbălon*, a cymbal—from Gr. *kumbos*, a cavity: It. *cimbalo*]: musical instrument of percussion, of brass in a circular form like a dish, struck together in pairs when used, and producing a loud, harsh clanging sound. The best are those made in Turkey and in China. Attempts to discover and imitate the composition of the metal have all failed. The notes in music for this instrument are all placed on the same line or space, in rhythmical succession. Cymbals are military instruments, but are now much used in the orchestra.

CYM′BEL: organ stop of the mixture species, consisting of three ranks of pipes. Also a stop found in very old continental organs, consisting of a machine like a star placed high up on the front of the organ, on which were hung small bells, which sounded when the star was moved round on its centre by a current of air from the organ.

CYMBELLA, n. *sĭm-bel′la* [dim. of L. *cymbalum*, a cymbal]: a reproductive locomotive body of an elliptical shape. found in some *Algæ;* a genus of *Diatomaceæ* (q.v.), typical of the sub-order *Cymbelleæ*, so called from its cymbiform valves. CYMBEL′LEÆ, sub-order of *Algæ*, order *Diatomaceæ*. The individuals are quite free.

CYMBIFORM, a. *sĭm′bĭ-fawrm* [L. *cymba*, a boat; *forma*, shape]: boat-shaped.

CYME, n. *sīm* [L. *cyma;* Gr. *kuma*, the young sprout of a cabbage]: in *bot.*, a common form of centrifugal (q.v.) inflorescence, in which the rachis or floral axis disappears by separating into irregular branches, and these are short and corymbose. It is of very general occurrence in the *Caryophyltaceæ*. Examples may be seen also in the common elder, different species of *Viburnum*, etc. The *verticillasters* of the *Labitaæ* are small cymes in the axils of opposite leaves, assuming nearly the appearance of whorls. CYMOID, a. *sī′moyd* [Gr. *eidos*, resemblance]: having the form of a cyme. CY′MOSE, a. *-mōz*, flowering in cymes. CYMULE, n. *sīm′ūl*, in *bot.*, a diminutive cyme; a branch or cluster of compound cymes.

CYMENE, n. *sī-mē′nĕ* [from *cumin*, as if *cyminos*]: an organic compound of the aromatic series found in cumin-oil; a hydrocarbon obtained from camphor—also CYMOL, n. *sī′mŏl* [*cumin*, and L. *olĕŭm*, oil]: another name for *cymene*.

CYMLIN, n. *sĭm′lĭn:* a kind of squash.

CYMOPHANE, n. *sī′mō-fān* [Gr. *kuma*, a wave; *phaino*, I appear]: a semi-transparent variety of chrysoberyl. CYMOPHANOUS, a. *sī-mŏf′ă-nŭs*, having a wavy floating light.

CYMRI, *kĭm′rĭ*, or KYMRY, a branch of the Celtic family of nations which appears to have succeeded the Gaels in the great migration of the Celts westward, and to have driven the Gaelic branch to the west (into Ireland and the Isle of Man) and to the north (into the Highlands of Scotland), while they themselves occupied the southern

parts of Great Britain. At a later period (during the 5th and subsequent centuries) they were themselves driven out of the Lowlands of Great Britain by the invasions of German tribes, and compelled to take refuge in the mountainous regions of Wales, Cornwall, and the north-west of England. A part of them also crossed over into Gaul, and settled in Brittany. Wales may now be regarded as the chief seat of the Cymri (a name which the Welsh still give to themselves), as it is still the chief place where the Cymric dialect of the Celtic language is spoken. A variety of this dialect, called the Cornish, was at one time spoken also in Cornwall, and another variety, called the Armorican, is still spoken in some parts of Brittany. On account of the similarity of the name the Cymri have been identified both with the Cimbri and the Cimmerii, but the identification in both cases, especially the latter, is doubtful. The origin of the name is unknown.

CYNANCHE, n. *sī-năn'kĕ* [Gr. *kŭōn*, a dog; *angcho*, I strangle]: disease of the wind pipe attended with inflammation—so named from the dog-like bark by which it is sometimes accompanied; general term for severer forms of sore throat: see THROAT, AFFECTIONS OF THE.

CYNANCHUM, *sī-năn'kum* or *sī-năng'kum:* genus of plants of the nat. ord. *Asclepiadaceæ*, having a wheel-shaped corolla, and a lobed or cleft corona. *C. Monspeliacum*—a herbaceous twining plant, with roundish, heart-shaped, stalked leaves, native of the shores of the Mediterranean—yields the drug called *Montpellier Scammony*, a violent purgative, not much used. *C. ovalifolium* is a native of Penang, and its sap yields caoutchouc of excellent quality.

CYNANTHROPY, n. *sĭn-ăn'throp-ĭ* [Gr. *kŭōn*, a dog; *anthrōpos*, a man]: a kind of madness in which a man imagines himself a dog, and imitates its bark and habits.

CYNARA, n. *sīn'a-ra* [L. *cinara;* Gr. *kinara*, an artichoke: comp. also Gr. *kunara*, the artichoke, or possibly the dog-rose]: genus of composite plants, typical of the tribe *Cynareæ*. See ARTICHOKE.

CYNAROCEPH'ALÆ: see COMPOSITÆ.

CYNARRHODON, n. *sĭn-ăr'rŏ-dŏn* [Gr. *kŭōn*, a dog; *rhodon*, a rose]: applied to the hips or fruit of dog roses, and roses in general.

CYNIC, n. *sĭn'ĭk* [L. *cynĭcus*, a cynic—from Gr. *kŭnĭkos*, dog-like—from *kŭōn*, a dog]: a surly or snarling man; a misanthrope; one of the cynics. CYN'IC, a. or CYN'ICAL, a. *-ĭ-kăl*, snarling; having the qualities of a surly dog; scornful; assuming to be universal critics, bnt with capacity only for fault-finding. CYN'ICALLY, ad. *-lĭ*. CYN'ICALNESS, n. CYN'ICISM. n. *-sĭzm*, austerity; churlishness.

CYNICS SCHOOL, THE: A school of philosophy founded by Antisthenes, an Athenian, who was a pupil of Gorgias and Socrates. The name cynic is derived from the gymnasium *Cynosarges*, in which the school assembled. The

Cynics held that virtue is the only good and that its essence consists in self-control. Virtue can be taught, and when thoroughly acquired renders its possessor independent of fate. Only one properly trained in virtue is really free, for he alone is able to satisfy his wants. Among the famous exponents of the school are Diogenes of Sinope, and Crates of Thebes.

CYNICTIS, n. *sĭn-ĭk'tis* [Gr. *kŭōn*, a dog: *iktis*, a kind of weasel or ferret]: genus of mammals whose proper place is perhaps among the *Viverridæ* (Civets), though it has affinities also to dogs and hyenas, in the family *Canidæ*.

CYNIPS, the gall-fly; a genus of insects belonging to the order *Hymenoptera*, the sub-order *Petiolata*, section *Parasitica*, and family *Cynipidæ*. They are a kind of small flies remarkable for their extremely minute head and large elevated thorax. The females are provided with an ovipositor by which they make holes where they deposit their eggs in different parts of plants, thus producing those excrescences which are known as galls. In these excrescences the small larvæ are produced, which live there either singly or several of them together for five or six months, and consume the interior for their nourishment. Some of the species undergo their transformations before leaving the excrescences, others quit them and bury themselves in the earth, to undergo their transformations there. The *C. gallotinctoria* is of a pale fawn-color, and lives on a species of oak which grows in the Levant, where it produces the so-called gall-nuts, which yield a black coloring matter, and are used in the making of ink. The *C. rosæ*, or bedeguar gall-fly, produces the hairy excrescences which are seen on the rose-bush and the sweet-brier. It is black, with the exception of the feet and the abdomen, which are red. The *C. psenes* is used in the Levant for caprification, an operation intended to hasten the maturity of figs. Some species of gall-flies, such as the *C. fulviceps* and the *C. quercusinferus*, have been produced from aphides instead of galls.

CYNOCEPHALUS, n. *sī'nō-sĕf'ă-lŭs* [L.—from Gr. *kuno-keph'ălos*, a dog's head—from *kŭōn*, a dog; *kephălē*, a head]: an ape with a dog's head: see BABOON.

CYNODON, *sĭn'o-dŏn:* genus of grasses, having digitate or racemose spikes, with spikelets on one side, glumes nearly equal, boat-shaped, and containing one floret, which has two awnless paleæ, the fruit coated with the hardened paleæ. The most important species is *C. dactylon*, a grass very widely diffused, being the principal fodder grass and best pasture grass of India, where it is the principal covering of many thousands of sq. m., and is known by the names of *Dhob*, *Doorba*, etc., common also in the south of Europe. Its creeping roots, and those of its congener, *C. lineare*, have medicinal virtues, and are sometimes used as a substitute for sarsaparilla.

CYNOMORIUM, *sī-nō-mō'rĭŭm:* genus of plants of the curious parasitic nat. ord. *Rhizantheæ* (q.v.). *C. coc-*

cineum, plant of a strange fungus-like appearance, is found in the islands of Malta and Gozo, most abundantly on a particular rock in Gozo. It was long known as *Fungus Melitensis*, and had the highest reputation as a styptic, besides being used as an astringent in dysentery and other maladies. So high a value was set upon this plant, that the knights of Malta took it under their particular care as one of their choicest possessions; it was carefully gathered, and deposited in a government office, from which the grand-master sent it to friendly sovereigns, and to the hospitals of the island. A keeper of the rock which produces the plant is still appointed, and his salary appears in the public accounts of Malta.

CYNOSURE, n. *sī'nō-zhûr* [L. *cynŏsūră*—from Gr. *kunosoura*, a dog's tail—from Gr. *kŭōn*, a dog, *kŭnŏs*, of a dog; *oura*, a tail]: the north star or pole-star, being the bright star of the constellation Little Bear, by which seamen used anciently to steer, and to which, therefore, they directed their looks; or, as some suppose (less probably), cynosure refers to the constellation *Ursa Minor*, which holds its place always near the pole, and toward which therefore all the other constellations as they wheel round it may be said to gaze. Milton's lines suit either view:

> Where perhaps some beauty lies,
> The Cynosure of neighboring eyes.—*Allegro.*

Hence, generally, any bright or beautiful object drawing general attention.

CYNTHIA, n. *sĭn'thĭ-ă* [*Cynthus*, the mountain in Delos where Apollo and Diana were born]: in *Latin myth.*, Diana; the moon represented by Diana.

CYNTHIANA, *sĭn-thë-â'na:* city, cap. Harrison co., Ky., 33 m. n.n.e. of Lexington, 66 m. s. of Cincinnati, on the s. fork of the Licking river, and on the Ky. Central railroad. It was settled 1780; has six churches, courthouse, graded free school, college for girls, national bank, two flour-mills, two carriage-factories, and a cigar-factory; and is noted for its manufactures of Bourbon whisky, and for its formerly celebrated race-course. During the civil war, it was attacked and captured by the Confederates twice and the Union forces once. Pop. 3,280.

CYPERACEÆ, *sī-per-ā'sē-ē*, or Caricineae, sometimes popularly called Sedges: nat. ord. of plants, akin to grasses, but having generally a triangular stem without joints, or almost so, and often leafless. The leaves are sometimes sheathing, but their sheaths are always entire, not split as in the grasses. The flowers, hermaphrodite in some, unisexual in others, consist of a scale-like *glume*, under which lie the organs of fructification, the pistils alone being frequently enclosed in a separate urn-shaped covering; the place of the perianth is sometimes supplied by a few bristles. The stamens are 1–12 in number, the anthers erect: the ovary is one-seeded, the style single, trifid or bifid; the fruit a small crustaceous or bony nut, the embryo lenticular, and inclosed within the base of the al-

bumen. Plants of this order, which contains fully 2,000 known species, occur in all zones; some of the genera, as *Carex* (q.v.), abounding in the colder, some, as *Cyperus* (q.v.), in the warmer parts of the world. See also SCIRPUS. Many are plants of very humble growth, some, as bulrushes, papyrus, etc., comparatively large; none rival in size the bamboos and other gigantic grasses. Most of them grow in marshy and moist places, but a few in sunny dry places. Their stems and leaves are in general very deficient in succulence, and, in most of them, also very rough, so that they are eaten by domesticated cattle only when in a very young state, and rather from necessity than from choice, and are regarded by farmers as mere weeds. For some uses of plants of this order, see BULRUSH: COTTON-GRASS: PAPYRUS.

CYPERACEOUS, a. *sī'pėr-ā'shŭs* [Gr. *kupeï'ros*, a kind of rush]: belonging to the nat. ord. of plants, the sedges, consisting of grass-like herbs growing in tufts—called the CY'PERA'CEÆ, *sē-ē*. CY'PERITES, n. plu. *-pėr-īts*, in *geol.*, long narrow ensiform leaves occurring in the coal-measures.

Cyperus Esculentus: *a*, whole plant; *b*, cluster of spikelets; *c*, a single flower.

CYPERUS, *sī'pėr-ŭs* or *sī-pē'rŭs*: genus of plants of the nat. ord. *Cyperaceæ*, distinguished by hermaphrodite flowers and compound spikelets of numerous two-rowed glumes including no bristles or scales. It contains a great number of species, chiefly tropical, and gradually decreasing in number toward the colder parts of the globe. Many of the species have tubers or corms, which in some are mucilaginous and nutritious; in others, contain also a bitter principle, and possess medicinal qualities. Of the latter class is *C. longus*, or Sweet C., common in ditches and wet meadows in some parts of Europe, the rhizome of which has an odor of violets, and is astringent, tonic, and stomachic. It has been employed in medicine from very ancient times; but is now used more in perfumery. Some of the Indian species are also used medicinally and in perfumery in their native country, as well as species of kindred genera. Of those with esculent tubers, the most important is *C. esculentus*, sometimes called Rushnut, native of the s. of Europe and n. of Africa, cultivated to a considerable extent in Egypt, Italy, Spain, Portugal, and the s. of France

The root of this plant throws out creeping branches at the end of which form farinaceous tubers of the size of a hazel-nut, called Earth Almonds (*Amande de Terre*) by the French. They have a sweetish taste, and are used like almonds for the dessert, also for making *Orgeat* (q.v.). They are said to possess not only nutritive, but restorative and stimulant, properties. Of late, they have become a considerable article of commerce, on account of the bland fixed oil which they yield, and are exported chiefly from Spain and Portugal to Holland. They contain about 16 per cent. of oil. The roots of this plant and its allies are the only roots known to contain much oil. The tubers of *C. bulbosus* or *Jemenicus* are eaten in India, either roasted or boiled, or are dried in the sun and made into bread; but their small size makes them troublesome of collection and preparation. Those of *C. geminatus* also are eaten. The tubers of some species of Scirpus (q.v.) resemble in quality those of the esculent species of cyperus. The fibre of *C. textilis* is so strong that it is used in India for making mats.

CYPHER, n. *sī'fẽr:* another spelling of CIPHER, which see.

CYPHONISM, n. *sī'fon-ĭzm* [Gr. *kuphōnismos*, punishment in the pillory; *kuphōn*, a pillory]: ancient mode of punishment or torture inflicted on criminals. It consisted in rubbing the offender with honey, and afterward exposing him in a cage, or fastening him to a stake to be a prey to swarms of insects.

CYPRÆ'A: see COWRY.

CYPRÆIDÆ, n. plu. *sī-prē'ĭ-dē* [L. *Cypŗia*, a name of Venus—from the island Cyprus]: the cowry family; the shells of carnivorous gasteropods chiefly inhabiting the shores of warm seas, a small species of which is used extensively as money in Asia and Africa.

CY PRÈS, *sī pres* or *sē prā:* a doctrine in English Law, concerning estates left by will. As the law forbids the giving of an estate tail to the son of an unborn son of a living person, after a life-estate given to such unborn son, and would regard such estate tail as void, the courts, when such a gift is made in a will, apply the doctrine of C. P., and endeavor, *as near as possible*, to carry out the testator's wish, by giving to the unborn son of the living person an estate tail, instead of for life, and so enabling his son to succeed if the entail be not barred: see ENTAIL. So also, when a charity cannot reasonably be administered precisely as directed by the testator, the court will, by the doctrine of C. P., administer it as near as possible to his directions.

CYPRESS, n. *sī'prĕs* [OF. *crespe*, a cyprus or thin material for a woman's neck]: in *OE.*, a thin, light, deep black fabric. CYPRESS-LAWN, crape: see SKEAT.

CYPRESS, n. *sī'prĕs* [OF. *cypres*—from L. *cyparis'sus*, and *cupressus*, the cyprus], (*Cupressus*): genus of plants of the order *Coniferæ*, the species of which are evergreen trees or shrubs, with small, generally appressed and imbricated leaves, and with almost globular cones, the scales of which bear numerous hard seeds. The best known species is the

Common C. (*C. sempervirens*), native of the Levant, the n. of Africa, and the s. of Europe. It is a tree of no great height, with quadrangular twigs. The leaves are dark green,

Branch and Fruit of Cypress (*Cupressus sempervirens*).

and the tree has, therefore, a sombre aspect, and from very early times has been an emblem of mourning; the Greeks and Romans put its twigs in the coffins of the dead, they used it to indicate the house of mourning, and planted it about burial-grounds, as is still the custom in the East. The wood of the C. is yellow or reddish, and has a pleasant smell. It is very hard, compact, and durable; the ancients reckoned it indestructible; and the resin which it contains gives it the property of resisting for a long time the action of water. It is not liable to the attacks of insects, and was formerly much esteemed for the purposes of the cabinet-maker. Some believe that the C. is the true cedar-wood of Scripture, and is has also been supposed that it is *Gopher wood*. Specimens of this wood in museums are known to be several thousands of years old The doors of St. Peter's at Rome, made of C., lasted from the time of Constantine the Great to that of Pope Eugene IV., above 1,100 years, and were perfectly sound when at last removed, that brazen ones might be substituted. Medicinal virtues were formerly ascribed both to the wood and to the seeds of the C., and the balsamic exhalations of the tree were reckoned very salutary in diseases of the chest. —Several other species of C. are natives of temperate and warm climates in different parts of the world. There are many species, the principal of which are the Portugal C. or Cedar of Goa (*C. Lusitanica*), native of Goa naturalized in Portugal; *C. thurifera*, native of Mexico, which exudes a resin used in that country for incense; *C. torulosa*, native of the Himalaya, which has been grown successfully in Britain; *C. funebris*, lately introduced into Britain from China; the White C. or White Cedar of N. America (*C. thyoides*). The

Deciduous C. or Virginian C. (*Taxodium distichum*, or *Schubertia disticha*), attaining a height of 120 ft., and growing in the cypress swamps of Delaware and some other states, is now regarded as belonging to a different genus. CYPRINE, a. *sĭp'rĭn*, pertaining to the cypress tree.

CYPRIAN, a. *sĭp'rĭ-ăn* [L. *Cyprus*, where Venus was worshipped]: pertaining to Cyprus: N. a lewd woman. CYP'RIOT, n. *-ŏt*, an inhabitant of Cyprus.

CYPRIAN, *sĭp'rĭ-an*, THASCIUS CÆCILIUS: illustrious father of the African Church: b. Carthage about the beginning of the 3d c.; d. 258. He belonged to a respectable family, and was a distinguished teacher of rhetoric before his conversion to Christianity, 246. His benevolence secured him great popularity, and his piety no less veneration; in consequence of which in less than three years he was made bishop of his native city. In 250, he fled into the desert, to avoid the persecution of Decius. Here he remained a whole year, but not in idleness. The same prudence, energy, and activity that he had always evinced were now shown in that extensive correspondence which he carried on with his clergy on ecclesiastical matters. On his return to Carthage, 251, he suppressed, but with moderation, the rising controversy regarding the *Lapsed* (q.v.), or Christians who, during the time of trial, had apostatized. C.'s views regarding the proper dignity of the Bishop of Rome have frequently been mistaken: he, indeed, recognized the Roman bishop as the successor of Peter, and as the representative of the unity of the church; but he asserted that the pre-eminence of the Roman see was confined to the earliest times, and that, in later times, other bishops, or successors of the apostles, had dignities equal to that of the successors of Peter. He therefore firmly opposed the supremacy asserted by the Roman bishop, Stephanus, in the question of baptism by heretics. In the persecution under Valerian, 257, C. was banished to Curubis; but having returned to Carthage in the following year, he was there beheaded. C was both learned and eloquent, but he was even more conspicuous for his dignified, moderate, and wise conduct. His knowledge of human nature enabled him to exercise a wide influence over the African Church; and his correspondence, from which the best idea of his character is obtained, gives an interesting picture of the times in which he lived. His writings—less crabbed and rhetorical than those of his teacher, Tertullian—contain, besides 81 *Epistolæ*, or official letters, several important treatises, among which may be mentioned the *De Unitate Ecclesiæ Catholicæ*, the *De Lapsis*, the *De Disciplina et Habitu Virginum*, the *De Gratia Dei*, and the *De Idolorum Vanitate*. The best editions of C.'s complete works are that of Fell, Bp. of Oxford (1682), and of Baluze (Paris 1726). There are many lives of C. One of the most recent is by Reinkens (1873).

CYPRINE, n. *sĭp'rĭn* [L. *cuprum*, copper]: a blue mineral found in Norway.

CYPRINIDÆ, *sī-prĭn'ĭ-dē*: family of malacopterous

fishes, having a small mouth, the jaws almost toothless, but the pharynx or hinder part of the mouth furnished with teeth; the body generally covered with scales, the gill-rays few, and no adipose fin (like the second dorsal fin of the trout or salmon). The genera and species are numerous. All the cyprinidæ are fresh-water fishes, and they are found in the lakes and rivers of almost all parts of the world. To this family belong the Carp, Dace, Tench, Bleak, Bream, Barbel, Minnow, Gold Fish, Roach, Loach, etc. Many of the species are much esteemed for the table. The fecundity of the cyprinidæ is great.

CYPRINODONTIDÆ, *sī-prĭn-o-dŏnt′ĭ-dē:* family of malacopterous fishes, allied to *Cyprinidæ*, with which they were formerly ranked, but differing from them in having the jaws more protractile and toothed. Some are American, some Asiatic; some inhabit fresh, and some salt water. To this order belong some interesting and curious fishes, particularly the Anableps (q.v.), remarkable for the conformation of its eyes. The species of the genus *Orestias* are found in the lakes of the Andes, at a great elevation above the sea, and are highly esteemed for the table.

CYPRINOID, a. *sĭp′rĭ-noyd* [L. *cyprĭnus*, a carp; Gr. *eidos*, likeness]: carp-like. CYPRINODONTS, n. plu. *sĭ-prĭn′ō-dŏnts* [Gr. *odous* or *odonta*, a tooth]: recent fossil species of carp-like small fishes.

CYPRIPEDIEÆ, *sĭp-rĭ-pē-dī′ē-ē:* orchidaceous plants, genus *Cypripedium*, differing from other orchids in having two anthers instead of one; familiarly known as *lady's slippers* and *moccasin-flowers*. They have a range of growth from the tropics to Siberia and Canada, and exhibit a pleasing variety of species, as the common native (U. S.) stemless *C. acaule*, the yellow-flowered *C parviflorum* and *C. pubescens*, the ram's head *C. arietinum*, the small white *C. candidum*, and, handsomest of all, the showy *C. spectabile*. They thrive best in deep peaty soil, are cultivated with ease, derive their popular name from the inflation of the third or lower lip or petal to the form of a sac resembling somewhat a slipper, and furnish *materia medica* a powerful antispasmodic.

CYPRIPEDIUM: see CYPRIPEDIEÆ: LADY'S SLIPPER.

CYPRIS, n. *sī′prĭs*, CYPRID′IDÆ, plu. *-prĭd′ĭ-dē* [Gr. *kupris*, a name of Venus]: genus of minute entomostracous crustaceans of the order *Branchiopoda* (q.v.), having the body inclosed in a shell of two horny pieces, somewhat resembling that of a bivalve mollusk. The antennæ and feet are beautifully feathered with long fringed bristles, by means of which these animals swim with much vivacity. They abound in pools of stagnant water. Their horny shells are very abundant in a fossil state in the Wealden rocks of England, in the limestone of the carboniferous series, etc.

CYPRUS, n. *sī′prŭs* [*Cyprus*, an island in the Levant]: a thin, transparent, black stuff.

CYPRUS, *sī′prŭs* [anc. Gr. *Kupros*, mod. Gr. *Kibris*, Fr.

Chipre, Ital. *Cipro*]: island 46 m. s. of Asia Minor, 60 m. w. of Syria; in that n.e. portion of the Mediterranean called the Levant. Cyprus was anciently divided into many small kingdoms. It was originally possessed by the Phœnicians, from whom it passed to the Greeks, subsequently to the Egyptians and Persians. After the victories of Alexander, it declared for Macedon. It next became a portion of the Græco-Egyptian kingdom of the Ptolemies, then of the Roman and Byzantine empires. The Arabs conquered it A.D. 648; in 1191, it was taken by Richard Cœur-de-Lion, who ceded it to the Templars. After several vicissitudes, it came into the possession of the Venetians (under whom the pop. is said to have been 1,000,000), from whom it was finally conquered by the Turks, 1571. The 'conditional convention' concluded between the English and Turkish governments, 1878, leaves Cyprus a Turkish possession, but provides for its being occupied and administered by England: it is now a British dependency.

The island was a celebrated seat of the worship of Venus, introduced in remote antiquity when it was colonized by the Phœnicians who inhabited the neighboring coast: the Phœnician goddess Ashtaroth (Astarte of the Greeks, and, later, Venus of the Romans) had here numerous temples and altars—scenes of a frightfully impure idolatry. Under the guidance of Gen. di Cesnola, U. S. consul in Cyprus, 1865 and subsequent years, treasures of ancient art, wonderful for beauty, value, and number, were exhumed, of which the great part were purchased for the city of New York, and are now open to the public in the Metropolitan Museum of Art in Central Park. The collection comprises many hundreds of objects, such as rings, diadems of rings, vases, sculptures, etc., some of which date 3,500 years ago.

Cyprus is 145 m. long, by 60 m. broad; area 3,700 sq. m. A range of mountains—the Stavro Vuno and Santa Croce (ancient *Olympus*)—the sides of which are very bold and rugged, runs through the whole length of the island, attaining an elevation of nearly 7,000 ft. above the sea. Three-fifths of the island is mountainous. Of these one-fifth has noble forests of oak interspersed with walnut-trees, and would furnish large supplies of sulphur, pit-coal, and metals of various kinds, under intelligent management; while two-fifths is adapted for vine and olive culture, and the growth of fruit-trees generally. 'The remaining two-fifths is composed of magnificent plains and extensive open country, which, though wanting in rivers and streams, are still very productive in cereals.' The soil is exceedingly fertile, yielding all kinds of grain. The chief products are wheat, barley, cotton, silk, madder roots, oil, wine, carobs, and salt. The wine of Cyprus is still excellent. The chief drawbacks to production, besides mismanagement, are the want of water—most of the streams becoming dry in summer—and the ravages of the locusts. It is said that there are good crops only twice in five years. The climate varies in various parts of the island; in the central plain, and about Larnaca, the summer heat is intense, especially from the middle of Sep. till the end of Oct.

Fevers, seldom fatal, are prevalent in the hot months. The first year of the English occupation, 1878, was exceptionally unhealthful both for natives and for foreigners; 1879 and 1880 were extremely healthful. The planting of trees, which have been hitherto recklessly extirpated, will doubtless improve the climate and help to fertilize again the more arid regions.

The English, in entering on the administration, endeavored in the main to improve, not to overthrow, the existing Turkish system. The courts of justice, having English assessors, became pure and less dilatory. Tithes were retained, but their collection simplified. Several rather high-handed ordinances, designed to prevent disturbance during a transition period, were withdrawn; and in 1880 the administration of Cypsela was transferred from the foreign office to the colonial office. About one-fourth of the inhabitants are Mohammedans, the rest orthodox Greeks.

In the year 1900–1 the imports were £364,092, the exports, £311,130. The chief towns are Lefkosia or Nicosia the capital; Famagosta, Larnaca, and Limassol. Pop. (1901) 237,022.

CYPSELA, n. *sĭp′sĕl-ă* [Gr. *kupsĕlē*, a hollow, a chest]: the inferior, monospermal indehiscent fruit of Compositæ; an achænium.

CYR, St., *săng sēr:* village in France, dept. of Seine-et-Oise, abt. 3 m. w. of Versailles. The village owes its origin to an educational institution for the daughters of nobles of fourth descent on the father's side, founded here 1686 by Louis XIV., on the suggestion of Madame de Maintenon. There were about 250 pupils, for whom Racine wrote his tragedies of *Esther* and *Athalie*. Madame de Maintenon died here, and was buried in the choir of the church. The institution was suppressed at the Revolution. In 1803, the buildings were converted by Napoleon to the uses of a military school, which still continues. Pop. of St. Cyr, 4,205.

CYRENAIC, a. *sī′rē-nā′ĭk:* pertaining to *Cyrēnē*, a Grecian colony on the n. coast of Africa. Cyrenaic School: a school of philosophy founded by Aristippus of Cyrene. It is chiefly known for its ethical doctrine maintaining that the good resides in pleasure. In certain later forms of Epicureanism this doctrine was interpreted in such a way as to identify pleasure with purely sensuous enjoyment. The Cyrenaics themselves held, however, the essentially Socratic view of pleasure, namely, that true pleasure can only be gained by intellectual insight and culture. Among the better known members of the school were the daughter of Aristippus, Arete, her son Aristippus the Younger, Theodorus and Hegesias.

CYRENAICA, *sĭr-ė-nā′ĭ-kâ:* ancient district in Africa whose capital was Cyrene (q.v.); at one period nominally extending from Carthage to Egypt, and inland as far s. as the oasis of Fezzap; but a great portion of this territory

was occupied by the subject Libyan tribes, and not by the Greek colonists, who were confined chiefly to the plateau of Barca, with the subjacent coast. This portion of C. was, and still is, one of the loveliest and most agreeable regions of the world. The climate delicious, mountains on the s. sheltering the land from the scorching blasts of the Sahara, and cool sea-winds fanning it on the north. From the central plateau, whose breadth is about 80 m., the land slopes down in verdant terraces to the Mediterranean. These terraces are cut and watered by mountain streams, forming luxuriant ravines. The productions of C. mentioned by ancient writers are corn, oil, wine, honey, fruits of all kinds, cucumbers, truffles, cabbage; flowers yielding the richest perfumes; and a rare plant called *silphium* (still abundant), from which was obtained the gum-resin, greatly esteemed for medicinal purposes. The country was noted for its breed of horses, but was much exposed to the ravages of locusts. Ancient C., which nearly corresponds with modern Barca (q.v.), was overrun by the Arabs in 647.

CYRENE, *sī-rē'nē:* capital of Cyrenaica (q.v.); founded, B.C. 631, by a colony of Spartans under Battus, whose dynasty lasted nearly two centuries. During this period, it made rapid advances. On the death of Arcesilaus IV., the last of the Battidæ, about B.C. 450, a republic was established, but the political condition of the city under the new government was far from prosperous. Party contests raged, until at last it fell into the hands of the Romans. During its prosperity, C. carried on a great commerce with Greece and Egypt, and to a less extent with Carthage. Its extensive ruins still attest its former magnificence. C. was the birthplace of the philosophers Aristippus, Anniceris, and Carneades, the poet Callimachus, the astronomer Eratosthenes, and the rhetorician Synesius, who afterward became bp. of Apollonia.

CYRENIUS, *sī-rē'nĭ-ŭs*, PUBLIUS SULPICIUS: called QUIRINUS by the Romans: gov. of Syria: d. A.D. 22. He was born at Lanuvium, and though descended from an obscure family, attained great honor through the favor of Augustus. It is believed that he held the office of gov. of Syria twice, B.C. 4 to 1 and A.D. 6 to 11. He was appointed preceptor of Caius, grandson of the emperor; married a grand-daughter of Sylla and Pompey.

CYRIL, *sĭr'ĭl:* prof. of law in the ancient college of Berytus, in the 5th c., called 'the great C.' to distinguish him from the noted jurist of a later day who compiled an epitome of the Digest. He had a great reputation as a teacher of law, wrote a learned treatise on legal definitions, was a founder of the ecumenical school of jurists which preceded Anastasius's succession to the eastern empire, and translated the commentary of Ulpian on the *Edict* and the *Responsa Papiniani*, and wrote a number of works showing an acquaintance with the ancient sources of law.

CYR'IL: 'apostle of the Slaves' in the 9th c.: d. 869. He sprang from a respectable family in the half-Slavic,

half-Greek town of Thessalonica. On account of his knowledge, he obtained the surname of the Philosopher. Having been consecrated a priest, he went forth during the reign of the Byzantine emperor, Michael III., to evangelize the Chasars, who dwelt by the Caspian Sea. His labors were very successful, the khan himself being among his converts. Boris, heathen prince of Bulgaria, having about this time besought the patriarch of Constantinople to send him a preacher of the gospel, C., with his brother Method, were selected. Their labors were not in vain. Boris was baptized 860. Rastic, prince of Moravia, next invited them to his country. They accepted the invitation, and while there, assisted by a number of their own pupils, completed their translation of the Holy Scriptures, which is in use to the present day, as a sacred or church language, among all Greek-Catholic Christians (Russians, Bulgarians, and Serbs). From Moravia, Christianity, according to the Slavic ritual, spread into Bohemia, whose prince, Boriwoj, and his spouse, Ludmilla, were baptized by Cyril. C. invented, abt. 863, the Cyrillic Alphabet, which, modified, is the present Russian alphabet. The *Apologi Morales*, ascribed to C., were published by Corter (Vienna 1630). See Richter's *Cyril and Method* (Olmütz 1825).

CYRIL, SAINT: Bishop of Alexandria, beginning 412; d. 444; one of the most energetic, but least amiable, of the church fathers. The date of his birth is not known. He was educated by the fanatical monks of Nitria, with whom he lived for five years, and who probably inspired him with that fiery, intolerant, and ignorant zeal which characterized him through life. Subsequently, he went to Alexandria, where he became a presbyter, and on the death of his uncle Theophilus, 412, obtained the episcopal see. The Alexandrian Jews, who were numerous and wealthy, were the first to feel the fierceness of his religious hate. Some Christian blood having been shed by them in a city tumult, C. put himself at the head of a rabble of zealots, attacked the Jewish quarter of Alexandria, destroyed the houses, and banished the inhabitants. Orestes, the prefect of Egypt, having drawn up an accusation against C., was attacked in the streets by 500 monks, who had come up from the deserts of Nitria, at the call of their old companion, eager for the work of destruction. One of these monks having fallen in the skirmish, his corpse was carried in procession to the High Church of Alexandria, where C. delivered a sanguinary discourse, gave the dead monk the name of *Thaumasius*, and pronounced him a martyr and a saint. But perhaps the most barbarous deed with which this persecutor of heretics and heathens had to do was the murder of the heathen maiden Hypatia (q.v.), daughter of the mathematician Theon. Theodoret gravely accuses him of instigating the Alexandrian populace to this horrid act. But the most important historic event in his career was his controversy with Nestorius (q.v.). All the worst features of his disposition appeared in this broil. Even the gentle Neander overflows with pious wrath, and pursues C. through 60 pages of his *Church History* with the fiercest epithets. In

the midst of unquietudes, which he himself had largely occasioned, he died. C.'s numerous writings consist of commentaries, treatises, homilies, epistles, etc. The best edition was published by Aubert (7 vols. Paris 1638). See Neander's *Kirchengeschichte*, transl. by Bohn, IV, 133–196.

CYR'IL, SAINT: Bishop of Jerusalem; eminent church father: abt. 315–386; b. Jerusalem. He was ordained deacon 334, presbyter 345, and on the death of Maximus 351 was elected bishop of his native city. His metropolitan was the Arian bp., Acacius of Cæsarea, with whom he was soon engaged in hot conflict concerning originally the rights of his office, but ultimately their differences of doctrine. Acacius accused C., before a council hastily gathered at Cæsarea, 358, of selling the treasures of his church in a time of famine to feed the poor! Strange to say, C. was deposed for doing this praiseworthy action. He now appealed to a larger synod, held at Seleuceia. This synod restored him to his office; but once more, through the persevering hostility of Acacius, he was deposed by a council at Constantinople, 360. On the death of the emperor Constantius, he was again restored to his episcopate, 362. Soon afterward his old enemy Acacius died, but C. was immediately involved in new difficulties. After considerable strife, C. was banished, by order of the emperor Valens, 367; nor did he return till the emperor's death, 378.

C.'s writings are extremely valuable, not for vigor, profundity, or beauty, but for theology. They consist of 23 treatises, 18 of which are addressed to catechumens, and 5 to the newly baptized. The former are for the most part *doctrinal*, and present in a more complete and systematic manner than the extant writings of any other father the creed of the church; the latter are *ritual*, and give a minute account of baptism, chrism, and the Lord's Supper. Their style is simple and unattractive. The best edition of C.'s works was published by Touttée, Benedictine monk (Par. 1720).

CYRIOLOGIC, a. *sī'rĭ-ō-lŏj'ĭk* [Gr. *kurios*, chief; *logos*, discourse]: pertaining to capital letters.

CYRUS (river in Asia): see KURA.

CYRUS, *sī'rŭs:* founder of the Persian monarchy, commonly called C. THE ELDER: d. B.C. 529. According to Herodotus, he was son of Cambyses, a Persian noble, and of Mandane, daughter of Astyages, Medo-Persian king. His birth was a source of alarm to his grandfather Astyages, who had previously had a dream, the interpretation of which portended that the offspring of Mandane would one day be the ruin of the Median supremacy and the ruler of all Asia. He therefore contrived to get the infant into his own hands, and gave it to Harpagus, his chief servant, with orders to put it to death. Harpagus promised to do so, but intrusted it privily to the care of a herdsman, who brought up the child with his own children. The young C. quickly distinguished himself among the country lads by his superior daring and dignity. On one occasion, he was elected king in some boyish game by his companions,

and, in the exercise of his regal authority, caused a nobleman's son to be severely scourged. The father complained to Astyages, who caused the culprit to be brought before him, and recognizing in his person and mien his own grandson, sent C. back to Persia—the Magi having in some way satisfied him that his dream had already received its fulfilment. C. himself, however, did not think so, and as he grew up to manhood, began to meditate ambitious schemes. All writers testify to his courage, amiability, and address. He was exactly the kind of man to gather round him brave, venturesome, loyal followers. The tyranny of Astyages had made him hateful to his subjects, and by the help of the crafty Harpagus, C. soon formed a party among the Medes favorable to his designs. Putting himself at the head of his Persian troops, C. advanced into Media, and overthrew the forces of Astyages (B.C. 559). After consolidating his new dominions, which seems to have cost him many years' labor, he proceeded in his career of conquest. The kingdom of Lydia first yielded (B.C. 546), and its king, the famous Crœsus, fell into his hands. Ultimately, the whole of Asia Minor was subdued But the crowning triumph of C. was his capture of Babylon, the metropolis of Assyria (B.C. 538), whose king was the Belshazzar of Daniel [as recent researches show, Nabonedus, who had left as associate king in Babylon his son, Belshazzar]. Through the instrumentality of C., the Jews were delivered from their captivity, and allowed to return to Palestine. His vast ambition, however, proved his ruin. He wished his power to overshadow all Asia, in harmony with the dream of his grandfather; and though his dominions already extended from the Hellespont almost to the Indus, he resolved to subjugate the Scythian peoples, and began an unjust war with the Massagetæ, a nation or tribe n.e. of the Caspian, beyond the Araxes, whose queen was called Tomyris. At first C. was successful, but in a second engagement he was defeated and slain.

Such is the account given by Herodotus; and though we are unable to affirm that it rests on absolutely historical ground, it is unquestionably to be preferred to any other. The work of Xenophon, entitled the *Cyropædeia*, is not a history; it is a historical romance, and was manifestly intended by the author for such. Xenophon wished to picture a great and wise king, and finding the elements both of greatness and wisdom in C., he took advantage of his historic personality, and engrafted upon it whatever, according to his own notion, would ennoble and dignify it.

CY'RUS, THE YOUNGER: second son of Darius Nothus, or Ochus; lived about 130 years after the great Cyrus. He conspired against his brother Artaxerxes Mnemon, who had succeeded to the throne (B.C. 404). The plot being discovered, he was at first sentenced to death, but afterward pardoned, and even restored to his dignity as satrap of Asia Minor. Here he employed himself in secret arrangements for war against his brother. In the spring of B.C. 401, he left Sardis at the head of 100,000 Asiatics and 13,000 Greek mercenaries, under pretense of chastising the robbers of Pisidia. Arta-

xerxes being warned of C.'s perfidy, made preparations to oppose him, and the two armies encountered each other in the plains of Cunaxa, 500 stadia from Babylon. C. was defeated and slain, though the Greeks fought with the greatest courage, and even routed that portion of Artaxerxes' troops immediately opposed to them. The fortunes of the Greeks, on their retreat through the highlands of Armenia, in severe winter-weather, are recorded by Xenophon in his *Anabasis* (q.v.).

CYST, n. *sĭst*, or CYSTIS, n. *sĭs'tĭs* [Gr. *kustis*, a bladder]: in animal bodies, a bag or vesicle. CYS'TIC, a. *-tĭk*, pertaining to or contained in a cyst. CYSTICA, n. *sĭs'tĭ-kă*, the embryonic forms of certain intestinal worms, as tape-worms: see CYSTIC WORMS. CYS'TICLE, n. *-tĭ-kl*, a small cyst. CYSTINE, n. *sĭs'tĭn*, a body related to urea, forming a rare kind of calculus in the human bladder. CYSTID'EANS, n. plu. *-tĭd'ĭ-ănz*, or CYSTOIDEA, n. plu. *sĭs-toy'dē-ă* [Gr. *eidos*, appearance]: in *geol*., a family of palæozoic echinoderms, having a spherical or bladder-like form. CYSTIPHYLLUM, n. *sĭs'tĭ-fĭl'lŭm* [Gr. *phullon*, a leaf]: in *geol*., a genus of Silurian turbinated corals, composed internally of small bladder-shaped cells. CYSTI'TIS, n. *-tī'tĭs*, inflammation of the bladder: see BLADDER. CYS'TOCARP, n. *-tō-kârp* [Gr. *karpos*, fruit]: the body which contains the reproductive cells in certain red sea-weeds. CYS'TOCELE, n. *-tō-sēl* [Gr *kēlē*, a tumor]: hernia or rupture of the bladder. CYS'TOLITHS, n. plu. *-līths* [Gr. *lithos*, a stone]: in *bot*., curious groups of crystals found in the superficial cells of nettles, and some other plants, as in the India-rubber plant. CYSTOID, a. *sĭs'toyd* [Gr. *eidos*, resemblance]: resembling a cyst. CYS'TOSE, a. *-tōz*, containing cysts. CYSTOT'OMY, n. *-tŏt'ŏ-mĭ* [Gr. *tomē*, a cutting]: the act or art of opening encysted tumors. CYSTID'IA, n. *-tĭd'ĭ-ă*, in *bot*., sacs containing spores; a kind of fructification in *fungi*.

CYST: in the original sense, a hollow internal organ with thin walls, as the urinary bladder and gall bladder; but commonly denoting pathological structures or new formations within the body, having the bladder form. Cysts are commonly transparent, often almost structureless in their tenuity; they are usually, however, lined by an epithelium (q.v.), and have membranous walls, with faint indications of fibrous structure. They are either simple or compound, unilocular or multilocular; they are sometimes small, numerous, and separate; in other cases they grow to an enormous size, and are very complex. Some cysts are distinctly parasitic, and of independent animal nature; such are Hydatids (q.v.) and the cystic Entozoa (q.v.) generally. Others are probably formed out of the structures in which they arise; their true pathology is obscure. Such are the cysts of the kidney, and, still more distinctly, the immense complex cystic structures which sometimes form in the ovary: see OVARIES.

CYSTICERCUS, *sĭs-tĭ-sĕr'kŭs* [Gr., bladder-tail]: according to many naturalists, a genus of Cystic Worms (q.v.) characterized by a dilated cyst with a single head,

which has four suckers and a circlet of hooks. This genus has, however, latterly been displaced from the system of nature by the discovery that the forms referred to it are only the young of tape-worms. This discovery has been confirmed by a multitude of observations and experiments with regard particularly to *C. cellulosæ*, found in human beings, and in many rodent and pachydermatous animals —as rabbits, pigs, etc.—the young of the common tape-worm; and *C. tenuicollis*, found more rarely in human beings, but often in the abdominal cavity of ruminant quadrupeds, and of pigs, horses, and many other animals—the young of a tape-worm of the dog. *C. cellulosæ* often exists in great numbers in the flesh of pigs, causing the diseased appearance known as *measly:* see CESTOID. It sometimes occurs in like manner infesting the human body, in muscles of most various parts; it has been found even in the heart, in the brain, and in the eye. That in such cases it sometimes causes death is certain, and its removal is not easy, except when it is so situated that it can be reached by the knife, nor is there any sure indication by which its presence in many situations can be known; but it appears also that it may die and be absorbed without causing any very serious consequences to the person in whom it has dwelt. The cysts of this species are always small; those of *C. tenuicollis*, however, which generally occurs in the liver, or in other abdominal organs, sometimes become, in some of the lower animals, as large as a child's head. Injurious consequences are produced by them when either numerous or very large: see Cobbold's *Entozoa*.

CYS'TIC WORMS: order of *Entozoa*, or Intestinal Worms, according to the system of Zeder and Rudolphi, for some time generally received by naturalists; characterized by the body ending in a transparent cyst or bladder filled with pellucid fluid, this body having sometimes only one head, as in *Cysticercus*, sometimes many, as in *Cœnurus*. It has, however, been found that certain species, as *Cysticercus cellulosæ* and *Cœnurus cerebralis*, are the young of cestoid worms, and it is therefore deemed highly probable that all the C. W. are of the same nature, particularly as all present the appearance of immaturity, in the want of visible organs of reproduction. Until a comparatively recent date, the animal nature of C. W. was not recognized, nor is it long since their relation to tape-worms and other cestoid worms has been fully ascertained. See CESTOID: CYSTICERCUS: ECHINOCOCCUS: STAGGERS: TAPE-WORM.

CYS'TIN, or CYS'TIC OXIDE: rare variety of calculus (q.v.). It contains $C_6H_6NO_4S_2$, has a crystalline texture, a brownish-yellow color, and is semi-transparent. It is not soluble in water, alcohol, or ether, but dissolves in the strong acids.

CYSTI'TIS: inflammation of the urinary bladder (q.v.).

CYTHERA: see CERIGO.

CYTHEREAN, a. *sĭth'ĕr-ē'ăn* [*Cythĕrŭ*, an island in the Ægean Sea, now Cerigo, celebrated for the worship of Ve-

nus]: of or belonging to Venus, or to love. CYTHERIDÆ, n. plu. *sĭ-thĕr'ĭ-dē*, a family of minute bivalve crustaceans

CYTISUS, *sĭt'ĭ-sŭs:* genus of plants of the nat. ord. *Leguminosæ*, sub-order *Papilionaceæ*, of which some species having long twiggy branches are popularly called BROOM (q.v.), others are called Laburnum (q.v.), while others still are generally known by the name Cytisus. For the characters of the genus, see BROOM. The species are numerous—small trees or shrubs, with leaves of three leaflets, and yellow, white, or purple flowers, natives chiefly of the warmer temperate parts of the old world. Many are very beautiful, and some are esteemed ornaments of shrubberies or green-houses.

CYTOBLAST, n. *sī'tō-blăst* [Gr. *kutos*, a vessel, a cell; *blastăno*, I bud]: the nucleus of animal and vegetable cells: see CELL: CELL THEORY. CY'TOBLASTE'MA, n. *-blăs tē'mă*, the viscous fluid in which animal and vegetable cells are produced, and by which they are held together.

CYTOGENESIS, n. *sī'tō-jĕn'ĕ-sĭs* [Gr. *kutos*, a cell; *genĕsis*, origin]: the development of cells in animal and vegetable structures. CYTOGENETIC, a. *sī'tō-jĕn-ĕt'ĭk*, pertaining to cell-formation. CYTOGENOUS, a. *sī-tŏj'ĕ-nŭs*, having connective tissue. CYTOGENY, n. *sī-tŏj'ĕ-nĭ*, cell-formation.

CYTOID, a. *sĭ'toyd* [Gr. *kutos*, a vessel, a cell; *eidos*, resemblance]: resembling a cell.

CYZICUS, *sĭz'ĭ-kŭs:* peninsula of Anatolia, Asia Minor, projecting into the Sea of Marmora; s.e. of the island of Marmora, and about 70 m. s.w. of Constantinople. It was at one time an island, but the gradual formation of an isthmus connected it with the mainland. It measures from s. to n. about 9 m., and from e. to w. 18 m. In early times, C. was a Milesian colony, and the city of C., upon whose site vineyards and orchards now flourish, is described by Strabo as one of the first cities in Asia for both extent and splendor.

CZACKI, *châts'kē*, TADEUSZ: 1765–1813, Feb. 8; b. Poryck, in Volhynia: Polish author. At the age of 20, he obtained an office in the supreme justiciary court at Warsaw, and was also made director of the crown archives —enabling him to gratify his taste for Polish history. Some essays on Polish finance induced the diet to select him, 1788, as a member of the commission of inquiry into the state of the revenue. A valuable result of his travels and labors in Poland is a map of its river system. The chief labor of his life was in connection with the education of his countrymen, especially in the old Polish provinces of Russia, where education had been almost wholly neglected. In 1807, he was appointed the deputy of Prince Czartoryski, who had the care of public instruction in the Polish govt. of w. Russia. C. died at Dubno. His most valuable work is upon Lithuanian law (*O Litewskich i Polskich Prawach*, 2 vols. War. 1800).

CZAR, n. *zär*, sometimes written TZAR [Polish form of the Russian title of the *Kaiser, Cæsar*, or Emperor: Russ.

Tsare]: title of the emperor of Russia; a king. CZARINA, n. *zâr-ē'nă*, title of the empress of Russia. CZAROWITCH, n. *zâr'ŏ-vĕtz*, eldest son of the emperor of Russia. CZAREVNA, n. *zâr-ĕv'nă*, wife or consort of the Czarowitch; one of the daughters of the Czar.—The word Czar is derived from the old Slavonic language, and signifies much the same as Ger. *Kaiser*, Lat. *Cæsar*, to which it probably owes its origin; though some etymologists identify it with the termination of the names of the old Assyrian kings—such as Phalassar, Nabonassar, and Nabopolassar. After the 12th c., the Russian annalists gave the title of Czar to the Grand Duke Wladimir, Monomach (died 1125), and to several of his successors. In general, however, the rulers of the various Russian provinces were called Grand Dukes till the 16th c.; e.g. the Grand Dukes of Wladimir, Kiew, Moscow, etc. The Grand Duke Wassilij Iwanowitch first assumed, 1505, the title of *Samodershez*, which signifies autocrat. The son of Wassilij, Iwan II., Wassiljewitch the Cruel, caused himself to be solemnly crowned Czar, 1547, Jan. 16. From this time, the Russian monarchs called themselves Czars of Moscow; and after the conquest of Little Russia and Smolensk, Czars of All the Russias. The word now became practically the equivalent of emperor; yet Peter I., 1724, thought fit to assume this latter title in addition; and as the Russian language had no term corresponding to it besides Czar, the Latin word *Imperator* was introduced, while the empress was termed *Imperatriza*. At first, several European powers refused to sanction the assumption of imperial dignity by the Russian Czar, but ultimately consented to do so. The wife of the Czar was named Czariza (Czarina); the sons, Czarewitch; the daughters, Czarevna; but after the death of Alexei—Peter I.'s son—these titles were abolished, and the imperial princes were called Grand Dukes, and the imperial princesses Grand Duchesses. In 1799, the emperor Paul I. introduced the title of Cesarewitch (not Czarowitch) for his second son, the Grand Duke Constantine. The heir-apparent and his wife are still called Cesarevitch and Cesarevna. Among the Russian people themselves, the emperor is more frequently called Gossudar (Hospodar, i.e., Lord) than Czar.

CZARTORYSKI, *châr-to-rĭs'kē*, ADAM GEORGE: 1770, Jan. 14—1861, July.; b. Warsaw; son of Prince Adam Casimir C., of an ancient Polish house, sometimes (but wrongly) said to to be sprung from the Jagellons (q.v.). Having completed an excellent education at Edinburgh and London, he returned to his native country, and took part against Russia in the war at the second partition of Poland. On the defeat of the Poles, C. was taken to St. Petersburg as a hostage, and showed so much ability and prudence as to gain the friendship of the grand duke Alexander, to whom he was attached, and the confidence of the emperor Paul, who made him ambassador to Sardinia. When Alexander ascended the throne, he appointed C. assistant to the minister of foreign affairs; and he was in official life until after the peace of Tilstit. As curator of the university of Wilna,

to which he was nominated 1803 by Russia, he exerted all his influence to keep alive a spirit of nationality; and when some of the students were arrested on a charge of sedition, and sent to Siberia, C. resigned his office. His successor reported to the emperor that the amalgamation of Russia and Lithuania had been delayed a century by C.'s occupancy of the curatorship. Russian favors could not deaden C.'s patriotism. In the revolution of 1830, he was elected president of a provisional government, and in this capacity summoned a national diet, which met, and, 1831, Jan., declared the Polish throne vacant, and elected C. head of the national government. He immediately devoted half of his large estates to the public service, and adopted energetic measures to meet the power of Russia, but in vain; the Poles were crushed, and C.—specially excluded from the general amnesty, and his estates in Poland confiscated—escaped to Paris, where he afterward resided, the liberal friend of his poor expatriated countrymen. In 1848, he liberated all his serfs in Galicia, and during the Crimean war he ineffectually endeavored to induce the Allies to identify the cause of Poland with that of Turkey.

CZASLAU, *châs'slow:* town of Bohemia, 45 m. e.s.e. of Prague. Its deanery-church, in which the celebrated blind Hussite leader, Gen. Ziska, was buried, is surmounted by the highest steeple in Bohemia. C. is noted as the scene of an important victory over the Austrians by Frederick the Great, 1742, May 17. There are copper-works, manufactures of chicory and beet-root sugar, and a distillery. Pop. 8,388.

CZECH, n. *tzĕk* or *chĕk:* native name of the Bohemians: the language spoken in Bohemia, Moravia, and Silesia, and by the Slovaks of n. Hungary; also spelt Tsech. The Czechs are the most westerly branch of the great Slavic family of nations. About A.D. 451–495, the C. migrated from their lands in Carpathia, on the upper Vistula, and came into the country now known as Bohemia. According to tradition, their chieftain was named Czech. Georgsberg, near Raudnitz, on the Elbe, is said to have been the first place chosen by the C. for their encampment. Other Slavic tribes migrated into Bohemia; but in the course of time the C. gained such ascendency that, in the 9th c., the name C. was commonly applied to the whole Slavic population of Bohemia (q.v.). Here, in Moravia, and in other parts of Austria, the C. now number in all above 6,000,000.

CZEGLED, *tsā'glĕd:* market-town of Hungary, 40 m. s.e. of Pesth. It has some handsome buildings and large breweries. The inhabitants are employed principally in agricultural pursuits, the district around yielding much grain and red wine. Pop. (1880) 24,872; (1900) 30,106.

CZENSTOCHAU, *chĕns-tō'chow,* or Czenstochowa, *chĕns-to-chō'vâ:* monastery of the order of St. Paul the Hermit, in the Polish govt. of Kalisch; the most frequented place of pilgrimage in the whole country, and celebrated throughout the Slavic nations. It occupies a commanding position on the Warthe, not far from the Silesian frontier, and possesses the famous dark-colored picture of the

mother of Christ, which has given occasion to the worship of the Black Virgin by all the Polish Catholics. This picture is probably of Byzantine origin. According to the legend in connection with it, it was painted by Luke himself; passed into the hands of the princess Helena; subsequently found its way through a Russian prince, Laon, to Belz in Galicia; and finally, through, Wadyslaw, Duke of Oppeln, who built the monastery of Czenstochau was brought thither to assist him against the Tartars. In more recent times, Czenstochau is noted as the only place in Poland which offered resistance to the army of Charles Gustavus, king of Sweden, on which occasion (1655) the inmates, comprising 70 monks and 150 soldiers, withstood a siege of 38 days by 10,000 Swedes.

CZERNOWITZ, *chĕr'nō-vĭts:* city, cap. of Bukowina in Austria; on a hill near the right bank of the Pruth, about 140 m. s.e. of Lemburg. It is the seat of a Greek archbishop; and in 1875 a university was founded here. The manufacturers are fast developing. Pop. (1869) 33,884; (1880) 45,600; (1891) 57,403; (1900) 67,622.

CZERNY, *chĕr'nē,* George (Turkish, *Karadjordje,* i.e., Black George): leader of the Servians in their struggles for independence: 1770-1817, July; b. the neighborhood of Belgrade. He showed, when young, his hatred of the oppressors of his country by murdering a Moslem. After spending some time in Austria, he returned to his paternal estate. In 1801, Aug., a band of janizaries broke into his dwelling, and plundered it. Czerny fled, vowing vengeance. He soon collected a band of malcontents, and commenced a sort of guerilla war. Gradually his numbers increased, and in 1804 he captured the fortress of Schabaz. Subsequently, he invested Belgrade, and in the beginning of 1806 routed the Turks at the rivers Drina and Morawa. Assisted secretly by Russia, he captured Belgrade 1806, Dec. After the treaty of Slobosje (1808, July 8), he was elected gov. by the people, and recognized as Prince of Servia by the sultan. The French invasion of Russia 1812 compelled the latter country to let Servia shift for itself. Hostilities recommenced; the Turks were successful, and Czerny, had to flee to Russia. He afterward went to Austria. Meanwhile, the freedom of Servia had been secured through the leadership of Milosch Obrenowicz; and 1817, July, Czerny returned, intending, as some suppose, to rally his partisans for the furtherance of his ambitious schemes, when he was murdered.

CZERNY, *chĕr'nē,* Karl: 1791-1857; German musical composer and teacher. His pieces were very numerous, and his *Practical School of Composition* has had extensive use. Among his pupils was the Abbé Liszt.

CZOLBE, Heinrich, a distinguished philosopher and physician who passed most of his life at Königsberg: b. 1819; d. 1873. He advocated materialistic doctrines in his earlier work, but subsequently came to a view resembling Spinoza's. See Spinoza.

D.

D or d, *dē:* consonant; fourth letter in the English and all the Græco-Roman alphabets; called in the Semitic languages *daleth* (hence Gr. *delta*, i.e., 'door;' and in all probability its original hieroglyphic or picture form was a door. The Greek Δ, in fact, yet preserves a recognizable resemblance to the door or opening of a tent, the kind of door most familiar to a nomadic people. D belongs to the order of letters called *dentals* (see LETTERS: ALPHABET), *t*, *d*, *th* (in *th*in), *th* (in *th*ine), and in the corresponding words of sister-languages is often exchanged with those of the same order or organ; thus: Ger. *du*, Eng. *thou*; Ger. *tod*, Eng. *death;* Lat. *duc-*, Eng. *tug;* Lat. *duo*, Eng. *two*. A more remarkable interchange is that between *d* and *l*, and *d* and *r*; see L and R. D seems to have been drawn into some words (to which it does not radically belong) by a kind of affinity for *n*, as Lat. *canis*, Gr. *kyon* Eng. *hound;* Lat. *gener-*, Eng. *gender*. *Di* followed by a vowel is sometimes transformed into J; as in *Janus* for *Dianus; Journal* from *diurnal*. *Di* followed by a vowel in Latin, has in Italian become *z;* and from MSS. and other evidence, we know that this sibilant sound of *di* prevailed, in the popular pronunciation at least, while Latin was yet a living tongue. Thus, *diabolus* is found written *zabolus*, and *Amazones, Amadiones*.—D, the Roman numeral for 500, arose out of the character IC: see NUMERALS.

D, in Music: second note in the natural scale; a whole tone above C, to which it stands in mathematical proportion as 9:8, that is, when C vibrates eight times, D vibrates nine times. The whole tone from C to D is called the greater whole tone, being a comma larger than the next whole tone from D to E.

DAB, v. *dăb* [a word imitative of the sound of a blow on a soft substance, as clay: F. *dauber*, to beat—from old Ger. *dubban*, to dab: old Dut. *dabben*, to pinch]: to strike gently: N. a gentle blow; a small lump of anything soft and moist; something moist thrown on a person; a small flat fish like a sole or plaice. DAB'BING, imp. DABBED, pp. *dăbd*. DAB'BER, n. an instrument used by engravers and others for applying ink. DABBLE, v. *dăb'l*, to play among water, or among mud and water; to throw water and splash it about; to do anything in a slight and superficial manner; to meddle; to do anything in a small way. DABBLING, imp. *dăb'lĭng*. DABBLED, pp, *dăb'ld*. DAB'BLINGLY, ad. *-lĭ*. DAB'BLER, n. *-lẽr*, one who meddles without going to the bottom; a superficial meddler.

DAB, n. *dăb*, DABSTER, n. *dăb'ster:* an adept, a skilful person.

DAB (*Platessa limanda*): fish of the same genus with the plaice and flounder, and much resembling them, but easily distinguished by its more uniform and lighter-brown color, the roughness of its scaly surface, and its more curved lateral line, which rises into a high arch over the pectoral fin. It is common on all sandy parts of the British coasts, inhabits deeper water than the flounder, and does not, like it, enter the mouths of streams. It is known on the coasts of the Firth of Forth as the Salt-water Fluke. It is preferred to the flounder for the table. It seldom exceeds 12 inches in length. A rather larger species of the same genus, is the LEMON DAB or SMOOTH DAB (*P. microcephala*) : its body is smooth, its color a pretty mixture of various shades of reddish-brown and yellow; its head and mouth are very small.

DABBLE: see under DAB 1.

DABCHICK, n. *dăb'chĭck* [Norw. *daube*—from *dauber*, to dive: Dut *dobber*, a float]: the little grebe, a bird so named from its constant habit of floating and bobbing under water: see GREBE.

DABEOCIA, n. *da-bē-ō'sĭ-a* [named after St. *Dabeoc*]: in *bot.*, Irish-wort, formerly considered a genus of plants, but now made a sub-genus of *Menziesia*, consisting of a single species, *D. polyfolia*, nat. ord. *Ericaceæ*.

DABITIS, n. *dăb'-ĭ-tĭs* [a word without etymological meaning but designed to have its letters symbolic]: in logic, an irregular form of the first figure of syllogisms, reducible to Darii, the third mode of that figure. See SYLLOGISM AND MOOD IN LOGIC.

DABNEY, CHARLES WILLIAM, American consular officer: b. Alexandria, Va. 1794, March 19; d. Fayal, Azores, 1871, March 12. He was made United States consul in the Azores in 1826, and by his services to the people of the islands made his name a household word among them.

DABNEY, CHARLES WILLIAM, American college president: b. Hampden-Sydney, Va., 1855, June 19. He is a son of R. L. Dabney (q.v.). He was graduated at Hampden-Sydney College in 1873, and at the University of Virginia in 1877; and for two years studied in Berlin and Göttingen. He was professor of chemistry in the University of North Carolina, and State chemist, and later director of the North Carolina Agricultural Experiment Station at Raleigh, and an executive officer of the Cotton Centennial Exposition, New Orleans, 1884-5, and of other industrial expositions. He was prominent in establishing the North Carolina College of Agricultural and Mechanical Arts, Raleigh; assistant secretary of agriculture of the United States, 1893-7; president of the University of Tennessee, 1887-1904; and president of the University of Cincinnati after 1904. He has published among other works. *Washington's Interest in Education*

(1899); *History of Agricultural Education in America* (1899); *Agriculture and Education* (1899).

DABNEY, Julia Parker, American artist and author: b. Fayal, Azores, about 1850. She was educated at Teneriffe, Canary Islands, and in Boston; and has published *Little Daughter of the Sun* (1896); *Poor Chola* (1897); *Songs of Destiny* (1898); *The Musical Basis of Verse* (1901).

DABNEY, Richard Heath, American historical writer: b. Memphis, Tenn, 1860, March 29. He is a son of Virginius Dabney (q.v.). He was graduated at the University of Virginia, afterward studying and taking the doctor's degree at Heidelberg, 1885. He was professor of history in Indiana University, 1886–9; and assistant professor, 1889–96; associate professor, 1896–7, and professor of historical and economical science after 1897 in the University of Virginia. He has published: *The Causes of the French Revolution* (1888); *John Randolph: A Character Sketch* (1898); and numerous magazine articles and pamphlets.

DABNEY, Robert Lewis, American Presbyterian clergyman: b. Louisa Co., Va., 1820, March 5; d. 1898. He was a professor in Union Theological Seminary, Virginia, 1853–83, and from 1883 was professor of philosophy in the University of Texas. During the Civil War he was a major in the Confederate army and in 1862 was Gen. 'Stonewall' Jackson's chief of staff. He published: *Life of General Thomas J. Jackson* (1864); *Defense of Virginia and the South* (1868); *Sacred Rhetoric* (1866); *Sensualistic Philosophy* (1878); *Theology, Dogmatic and Polemic* (1879); and *Collected Discussions* (1891).

DABNEY, Virginius, American author: b. Elmington, Va., 1835, Feb. 15. His publication of *The Story of Don Miff, as Told by his Friend, John Bouche Whacker, a Symphony of Life* (1886), reached its 4th edition in six months. He published *Gold that Did not Glitter.*

DA CAPO, *dâ kâ'pō* [It. *da*, from, and *capo*, head, beginning]: in *music*, a direction to be placed at the end of a part or movement, indicating that the performer must return to the beginning of the movement, or to some other part of it usually marked with the sign :$:, and finish where the word *fine* is placed. Scarlatti was the first who introduced the use of the *da capo* in his opera of *Theodora*. The words are generally abbreviated thus, D. C., sometimes *D. C. al fine.*

DACCA, *dăk'ka:* district in Bengal; n. lat. from 23° 12′ to 24° 17′, and in e. long. from 90° 11′ to 90° 58′; 2,797 sq. m.; 2,420,656 inhabitants. Forming part of the great delta of the Ganges and Brahmaputra, it is traversed by streams in every direction, being so low and level as to be generally flooded during the rainy season. It is, on this account, admirably adapted to the cultivation of rice. From the character of the country, roads—happily rendered less necessary by the network of rivers—are very difficult of construction. In addition to the cap. city of its

own name, the district has two principal towns, Narainganj and Islampoor. Though the climate, as a whole, is moist, it is not uniformly so, the annual rainfall varying in different years from 46 to 93 inches. Among commercial crops, cotton—the raw material of the far-famed muslins—formerly was prominent. It is now comparatively neglected, being too short in the staple for the coarse fabrics which are all that are now made in the district. Recent attempts to introduce a better variety from the United States have failed. It was in 1765—the epoch of the cession of Bengal, Bahar, and Orissa on the part of the Great Mogul—that Dacca became subject to England; but till 1845, the heirs of the native ruler succeeded each other as stipendiaries of the E. India Company.

DACCA: city of Bengal Proper, about 190 m. n.e. of Calcutta; lat. 23° 43′ n., and long. 90° 25′ e. It is on the Burha Gunga, a considerable auxiliary of the Dulasseree, which is itself at once a mingled offset of the Brahmaputra and the Ganges, and an affluent of the lower course of the former stream. The city thus enjoys singular facilities in the way of inland navigation. Till the close of the 18th c., Dacca was widely noted for the delicate texture of its muslins, which, in the phraseology of the East, were characterized as 'flowing water' and 'evening dew;' and, in connection with this manufacture, the French and the Dutch, as well as the English, had extensive establishments in the place. Since 1801, however, these European agencies have disappeared; while the annual value of the elegant fabric, under the influence of British competition, has gradually fallen from £250,000 to nothing at all. The present aspect of the city is in keep- with this utter decay of its staple trade. In many quarters are ruins overgrown with jungle, haunts of tigers and serpents; and in many cases these are ruins of splendid edifices, such as the residences of its native princes and the factories of its foreign sojourners. Still Dacca, within a space of 4 m. in length by 1¼ in breadth, contains a large population. It seems, of late years, to have partially recovered from its commercial decline, and produces lac, dye, soap, cheese, and gold and silver ornaments. Sometimes as many as 300 elephants are for sale in the depots here. There are 180 mosques and 119 pagodas, and places of worship belonging to Roman Catholics, Armenians, Greeks, and English; also a college and several schools. Dacca is connected with Calcutta by the Eastern Bengal railway. Pop. (1901) 90,679.

DACE, n. *dās*, or Dare, or Dart [F. *dard*], (*Leuciscus vulgaris*): small fresh-water fish of the family *Cyprinidæ* (q.v.), and of the same genus with the roach, ide, chub, bleak, minnow, etc. It inhabits usually the deep and clear water of quiet streams. It is found in Italy, France, Germany, etc., and in some of the rivers of England, but is very local. In America it is plentiful. It is in form like the roach, but rather more elongated; the mouth rather larger, the scales are smaller. The upper parts are dusky

blue, becoming paler on the sides, and passing into white on the belly, the cheek and gill-covers silvery white. The Dace is gregarious, and swims in shoals. Its flesh is not highly esteemed. The Dace is perhaps the liveliest and most active of the *Cyprinidæ*, and affords the angler fair sport both with fly and bait. It is fished for with a light float and a fine gut-line. The float is set so that the bait may almost touch the bottom. At the least symptom of a bite, the angler must strike quickly. The best baits are the red-worm, the tail of a lob-worm, gentles, greaves, and flies or grubs of any kind. The best places to fish with bait are moderately sharp streams, of from two to four or five ft. deep. Dace at times take the fly very freely, and show capital sport. Small red and black palmers will be found the most useful flies for the purpose, and their killing properties will be greatly increased if the hook is tipped with a tough gentle, as Dace are very apt to follow the fly without taking it, when the gentle overcomes their scruples; a small piece of the white, tough, inner rind of bacon answers equally well; and even a small piece of wash-leather may be used. Shallows, scars, and by the edge of weed-beds, are the best spots for the fly. Dace may be taken also by 'dapping' with the natural fly, and those so taken are usually the finest fish. Dace seldom exceed a pound in weight, though in some rivers they have been taken up to 1½ lb. They spawn in the end of April, or early in May, and soon recover their condition again.

DACELO, n. *dā′sĕlō* [transposition of *alcedo*, the L. name for the kingfisher (q.v.)]: in *ornith.*, genus of kingfishers, natives of Australia.

DACHSHUND, n. *dâchs′hônt*, [Ger. badger hound]: a breed of small German hounds with very long, cylinder-shaped bodies; short, crooked legs; large heads; long pendant ears; and short, stiff, smooth hair. In color these dogs are black-and-tan, or tan with black ears, the former being the characteristic coloring of the best sort. They were originally used in Germany to hunt badgers, and sometimes even in fox-hunting. Though slow in movement, they are possessed of a keen scent, and great power of endurance, rendering them valuable as hunting-dogs when suitably trained. They are much used by sportsmen on the continent of Europe, but their usefulness is impaired by the difficulty of keeping them under proper command. The dachshund is akin to the old English turnspit, and a similar dog is depicted on the ancient Egyptian monuments.

DACIA, *dā′shĭa:* land of the Daci or Getæ. Its geographical limits were very indefinite until its conquest by the Romans. After that period, it comprised the various countries now known as Eastern Hungary, Transylvania, Bukowina, Moldavia w. of the Pruth, Wallachia, and the Banat of Temesvàr. The Gatæ came originally from Thrace, and were divided into various tribes. Their course northward can be only imperfectly traced; but we know that, shortly before the time of Alexander the Great (B.C.

335), they had migrated across the Danube. It is not known when or for what reason the Getæ changed their name to Daci. They seem to have been the most valiant of the Thracian barbarians. Curio, the first Roman general who ever penetrated as far n. as the Danube, did not venture to assail them. Julius Cæsar, however, is said to have intended their subjugation. In B.C. 10, Augustus sent an army up the valley of the Maros. From this time, there was almost continual fighting between the Romans and the Daci, on the whole, to the advantage of the latter, who actually compelled their civilized enemies, in the reign of Domitian, to pay tribute. In A.D. 101, the emperor Trajan crossed the Theiss, and marched into Transylvania, where he fought a great battle near Thorda. The peasants call the battle-field to the present day *Prat de Trajan* (*Pratum Trajani*, field of Trajan). The Daci, who were commanded by their famous chief Decebalus, were defeated. A second expedition of the emperor (A.D. 104) resulted in the destruction of their capital, the death of Decebalus, and the loss of their freedom. Roman colonists were sent into the country, a bridge was built over the Danube—the ruins of which are extant—and three great roads were constructed. In 270–275, the Romans abandoned the country to the Goths, and the colonists were transferred to Mœsia. After a series of vicissitudes, Dacia fell into the possession of the Magyars in the 9th c.

DACIER, *dă-se-ā′*, ANDRÉ: French author: 1651, Apr. 6—1722, Sep. 18; b. Castres, in Upper Languedoc; of Protestant parentage. He studied at Saumur; and in 1672 came to Paris, where he was employed to bring out an edition of the Latin writer *Festus*, for the use of the dauphin, which he did 1681. In 1683, he married Anne Lefèvre, also Protestant; and two years later, both entered the Rom. Cath. Church. Dacier subsequently became royal librarian, member of the Academie des Inscriptions, and perpetual sec. of the 'Academie.' Dacier's works, besides his *Festus*, are numerous, but of small value.

DACIER, ANNE: 1651–1720, Aug. 17; b. Saumur; wife of André Dacier. After the death of her learned father, who had developed her talent, she came to Paris, where she acquired such reputation by her edition of Callimachus (1674), that the Duke of Montausier commissioned her to edit several of the ancient authors for the use of the dauphin. Similarity of tastes and employment led to a marriage between her and André Dacier. Her domestic duties did not weaken her literary ardor. Besides editing various of the classics, she translated the comedies of Terence; several plays of Plautus, with an able dissertation; and portions of Anacreon, Sappho, and Aristophanes. Her admiration of Homer was unbounded, and involved her in two learned controversies.

DACKER, v. *dăk′ėr*, [Prov. Eng.]: to search, as for stolen goods; to stroll, to loiter.

DACNE, n. *dăk-nē* [Gr. *daknō*, I bite, I sting]: in *entom.*, genus of coleoptera, belonging to the family *Clavicornes*.

DACNIS, n. *dăk'nĭs* [Gr. *daknō*, I bite]: genus of birds belonging to the family *Conirosters* (q.v.). The forehead, shoulders, and wings are sky-blue, the tail black. They are natives of Mexico.

DACOIT, n. *dăk'oyt;* DACOITY, n. *dă-koy'tĭ:* see DAKOIT.

DACOITS', or DAKO'TAH INDIANS: see SIOUX: INDIANS.

DACRYDIUM, *da-krĭd'ĭ-ŭm:* genus of trees of the nat. ord. *Taxaceæ*, having male and female flowers on separate trees. The species are lofty trees, natives chiefly of Australia and New Zealand. *D. Franklinii* is called HUON PINE, though rather a yew than a pine. Its timber is harder than any Baltic pine, and is excellent for spars for naval purposes. *D. taxifolium*, the Kakaterra Tree of New Zealand, attains a height of 200 ft., and is very valuable for timber. A beverage resembling spruce-beer is made from its branches.

DACRYOLITE, n. *dăk'rĭ-o-līt* [Gr. *dakru*, a tear; *lithos*, a stone]: in *med.*, a calculous concretion in the lachrymal passage.

DACRYOMA, n. *dăk-rī-ō'ma* [Gr. *dakruo*, I weep—from *dakru*, a tear]: a diseased condition of the lachrymal duct of the eye, by which the tears are prevented from passing into the nose, and consequently trickle over the cheek.

DACTYL, n. *dăk'tĭl* [Gr. *daktŭlos;* L. *dac'tylus*, a finger]: name of a measure or 'foot' in Greek and Latin versification, consisting of three syllables, one long and two short, as in the word *dūălĭst*. It was so called from its resemblance to the finger, which consists of three joints —one long and two short. The name is sometimes applied to a trisyllabic measure in English verse, consisting of one accented syllable and two unaccented syllables, as in *déstiny:* see VERSE. DACTYL, the razor-fish: see SOLEN. DACTYL'IC, a. *-ĭk*, relating to or consisting of dactyls; dactylic verses consist of dactyls and equivalent feet: see HEXAMETER. DAC'TYLIST, n. one who writes flowing dactylic verse. DACTYL'OGLYPH, n. *-ō-glĭf* [Gr. *glupho*, I engrave]: the name of the artist inscribed on a finger-ring or gem. DAC'TYLOG'RAPHY, n. *-tĭl-ŏg'ră-fĭ* [Gr. *grapho*, I write]: the art of gem-engraving. DAC'TYLOL'OGY, n. *-tĭl-ŏl'ŏ-jĭ* [Gr. *logos*, discourse]: the art of communicating ideas by certain movements and positions of the fingers: see DEAF AND DUMB. DACTYLION, n. *-ĭ-ŏn*, in *surg.*, cohesion between two fingers, whether congenital or from burning; in *mus.*, an instrument invented by Henry Herz for training the fingers and suppling the joints: see CHIROPLAST.

DACTYLETHRA, n. *dăk-tĭl-ĕth'ra* [Gr. *daktulos*, a finger; *etheira*, hair]: genus of amphibians natives of s. Africa, the only one of the family *Dactylethridæ*. It con-

tains two species. They are remarkable for having the three inner toes enveloped in a sharp-pointed claw or nail.

DACTYLI, n. plu. *dăk′tĭl-ī* [Gr. *daktulos*, a finger]: the priests of Cybele in Phrygia, so called from having been five in number, corresponding with the number of fingers on the hand.

DAC′TYLIS: see Cock's-Foot Grass.

DACTYLIUM, n. *dăk-tĭl′ĭ-ŭm* [Gr. *daktulos*, a finger]: genus of hyphomycetous fungi, consisting of molds growing over decayed plants. One species, *Dactylium oogenum*, grows upon the surface of the membrane within the shell of the eggs of fowls and other birds.

DACTYLOPORA, n. *dăk-tĭl-o-pōr′a*, or Dactylipor′a, *-ĭ-pōr′a* [L. *dactylus;* Gr. *daktulos*, a finger, and L. *porus;* Gr. *poros*, a passage]: genus typical of the *Dactyloporidæ*, a family of imperforate foraminifera, sub-tribe *Miliolida*.

DACTYLOP′TERUS: see Flying Gurnard.

DACTYLORHIZA, n. *dăk-tĭl-o rī′za* [Gr. *daktulos*, a finger; *rhiza*, a root]: disease in the bulbs of turnips, causing them to branch out and become hard and useless. It is commonly called Fingers-and-Toes.

DAD, n. *dăd*, or Daddy, n. *dăd′dĭ* [W. *tad;* Gael. *taid;* Ir. *daid;* Lap. *dadda*, a father]: in *children's language*, name for a father; in familiar use among the less refined of many countries.

DAD, n. *dăd*, or Dawd, n. *dawd* [an imitation representing the sound of a blow]: a blow; a thump: V. to slam, as, 'he dadded to the door.' Dad′ding, imp. Dadded, pp. *dăd′ĕd*.

DADE, v. *dād* [imitative of the syllables *da*, *da*, the incoherent utterances which accompany the muscular exertions of an infant: F. *dada*, a hobby-horse]: to teach a child to walk; to hold up a child by leading-strings while attempting to walk. Da′ding, imp. Da′ded, pp. Dading-strings, leading-strings by which a child is held up while learning to walk. Daddle, v. *dăd′l*, or Daidle, v. *dā′dl′*, [Scot.]: to walk unsteadily like a child; to waddle like a duck; to do anything imperfectly; to trifle. Daddling, imp. *dăd′lĭng*. Daidling, imp. *dād′lĭng*. Daddled, pp. *dăd′ld*. Daidled, pp. *dād′ld*.

DADO, n. *dā′dō* [It. *dado*, a cube or die for playing with]: in classical *arch.*, the cubic block which forms the body of a pedestal. It is also applied to the plane face and the series of moldings which, in the interiors of buildings, form, as it were, a continuous pedestal. The interior dado, often called wainscot, is formed of wood, and, running round the bottom of the walls of a room, serves to protect the plaster or paper from injury. It is generally about three ft. in height, and surmounted by a narrow cornice. It is sometimes imitated in paper.

DADUR, *dâ-dŭr′:* town of Beloochistan, five m.e. of the Bolan Pass. Though it is in the 30th degree of n. lat., yet

it is said to be one of the hottest places in the world. It contains about 3,000 inhabitants. It is worthy of notice chiefly as the spot where, 1840, Nov., the British troops routed a Kelat force. The neighborhood yields grains of various kinds, pulse, cotton, sugar, madder, and fruits. Pop. abt. 3,000.

DÆDALENCHYMA, n. *dē'dă-lĕng'kĭ-mă* [Gr. *daidalĕŏs*, skilfully wrought, variegated; *engchuma*, an infusion, tissue] tissue composed of entangled cells, as in some fungi.

DÆDALIAN, a. *dē-dā'lĭ-ăn* [L. *dædălus*, artificial, skilful—from Gr. *Daidalos;* L. *Dædalus*, a renowned Athenian artificer]: formed with art; displaying artistic skill intricate. DÆDALOUS, a. *dĕ'dă-lŭs*, in *bot.*, irregularly jagged, as the broad apex of a leaf; having a variegated or winding border.

DÆDALUS, *dĕd'a-lŭs*, in Greek Mythology: descendant from the old Athenian race of kings, the Erechtheidæ; contemporary of Theseus and Minos. He was famous as an artist and mechanician. Among his numberless works were the Cretan labyrinth, the Colymbethra or reservoir, near Megaris in Sicily, the temples of Apollo at Capua and Cumæ, that of Artemis Britomartis in Crete, and an altar sculptured with lions on the Libyan coast. His mechanical genius is clearly celebrated in the poetic fiction of his flying safely over the Ægean by wings which he had himself made. Dædalus got the credit among the Greeks of having invented carpentry, and most of its tools, such as the saw, the ax, the plumb-line, the gimlet, as also glue. The history of Dædalus is obviously a myth, wherein, as recent criticism has conclusively shown, is embodied that epoch in which the first rude forms of art were thrown aside, and a higher skill and intelligence brought into action.

DÆMONOROPS, n. *dē-mŏn-ōr'ŏps* [Gr. *daimōn*, a god or demon; *horaō*, I see (?); *ōps*, the face (?)]: genus of palms, tribe *Calameæ*. *Dæmonorops draco* is the Dragon's-blood Palm.

DAENDELS, *dân'dĕls*, HERMANN WILHELM: 1762-1818, June; b. Hattem, Gueldres: Dutch general. He took part in the revolutionary disturbances in Holland 1787, and was compelled to seek refuge in France. In the campaign of 1793, he rendered important service to Dumourier, and was elevated to the rank of a gen. of brigade. In 1799, he commanded one of the two divisions of the republican army, which, with a third corps under the orders of General Brune, compelled the Anglo-Russian forces to surrender. He left the service 1803, but in 1806 he was re-instated in his former rank by the king of Holland. He conquered E. Friesland, and was made gov. gen. of Münster, commander-in-chief of the Dutch cavalry, marshal of Holland, and gov. gen. of the Dutch E. Indian possessions. This last office he held 1808-11. He published a work on his administration in Java, which

was an important contribution to European knowledge of that island. On the overthrow of Napoleon, his services were secured by the new king of Holland, Wilhelm I., who intrusted him with the organization of government in those colonies on the coast of Africa which had been restored to the Dutch.

DAFF, v. *dăf* [do, and *aft*, after: formed as *doff*=do off, and *don*=do on]: in *OE.*, to throw back or toss aside; to make sport; to toy. DAFF, v. *dăf*, [Scot.] to make foolish. N., a fool. DAFF, v. *dăf*, [Scot.]: to doff. DAFF'ING, imp. DAFFED, pp. *dăft*. DAFFIN, n. *daf'ĭn*, or DAF'FING, n. merriment; foolery; excessive diversion; a dallying; a toying.

DAFFODIL, n. *dăf'ō-dĭl* [F. *asphodèle;* OF. *asphodile*—from Gr. *asphodēlos*]: also the corrupted forms DAF'FODIL'LY, n. *-dĭl'lĭ*, and DAF'FODOWNDIL'LY, n. *-down-dĭl'lĭ:* name of those species of *Narcissus* (q.v.) which have a large bell-shaped corona. The common Daffodil (*N. pseudo-narcissus*) is a native of most parts of Europe, growing in woods and hedges. All the other species are more southerly, abounding in the countries near the Mediterranean. Same of them, as *N. Minor*, have become naturalized in more northerly countries, as ornaments of gardens, in which double-flowered varieties are also cultivated. They are favorites, not so much for their beauty, which is not of the most delicate kind, as for their large yellow flowers in early spring. The bulbs are purgative and emetic. The mode of cultivation is the same as for other species of Narcissus.

DAFILA, n. *dăf'ĭl-a:* genus of *Anatidæ*, comprising the pintail ducks.

DAFT, a *dâft* [Gael. *daibhte*, excited with drink]: in *Scot.*, insane; stupid; foolish.

DAG, n. *dăg* [imitative of the noise of a blow with something sharp: F. *dague:* It. *daga*, a dagger]: a thick clumsy pistol, the original pistol, used in the 15th and 16th c. In the *Spanish Tragedy*, 1603, one of the characters shoots the dag. DAGGER, n. *dăg'gĕr* [W. *dagr;* Ir. *daigear*, a dagger]: a poniard; weapon resembling a sword, but considerably smaller, being used for stabbing at close quarters; generally two edged, and very sharp toward the point. Originally, it had no guard for the hand, and was worn at the girdle in a sheath. It is now a general military weapon.—The sign of the Dagger, in *printing*, is used as a mark of reference—thus (†): V. to pierce or stab with a dagger. TO LOOK DAGGERS, to look fiercely or reproachfully. DAGGERS DRAWN, at enmity.

DAGGETT, *dăg'gĕt*, NAPHTALI, D.D.: 1727, Sep. 8.—1780, Nov. 25; b. Attleborough, Mass.: Presb. and Congl. minister. He graduated at Yale College 1748, was ordained pastor of the Presb. Church, Smithtown, L. I., 1751, became prof. of divinity in Yale College 1755, and held the office till death; also served as pres. *pro tem.* of the college 1766-7. He took part in the defence of New Haven against

the British 1779, July, was captured, and forced by bayonet thrusts to act as guide for them. He published an account of the British occupation, 1780.

DAGGLE, v. *dăg'l* [OE. *dag*, a jag or shred: Fin. *takku*, a shaggy fleece: Sw. *dagg*, dew; *dagga*, to bedew: Icel. *döggva*, to bedew]: to trail in the dirt; to hang in wet dirty dags or jags, as the wool at a sheep's tail. DAG'GLING, imp. DAGGLED, pp. *dăg'ld*, trailed in mud or foul water; befouled. DAG'LOCK, n. a lock of wool on a sheep that hangs and drags in the wet. DAGSWAIN, a coarse woolen blanket. DAGGLE-TAILED, *-tāld*, bemired or bespattered behind with mud or water.

DAGHESTAN, *dâ-gĕs-tân'* [Tartar, *Tagh stan*, signifying mountainous country]: province of Asiatic Russia called also Derbend), between the Caucasus and the w. coast of the Caspian Sea; about 10,000 sq. m. The surface is generally mountainous, traversed by offsets from the Caucasus, but there are valleys and level tracts of great fertility. The inhabitants are chiefly Lesghians (fanatical Mohammedans). Until 1812, the country belonged to Persia. Since its annexation by Russia, the Lesghians have fought desperately for independence (see SHAMYL: CAUCASUS). Pop. about 602,000

DAGO, n. *dā'gō*, [Slang U. S. corr. or Diego]: an Italian, Spaniard or Portuguese.

DAGOBA, n. *dăg'ō-bă*, or DAGHOPA [according to Wilson, from *deha*, the body, and *gopa*, what possesses, because it contains the hair, teeth, etc., of Buddha; according to others, from *dhatu*, a relic, and *gabba*, a shrine]: monumental structure frequent in the east, containing relics of Buddha; its usual form is a hemispherical dome of earth or stone, with a small cross erection on its top called a *tee*.

DAGON, n. *dā'gŏn* [Heb. *dag*, a fish]: national idol of the Philistines; frequently mentioned in Scripture; in profane history, the name by which it is known is Derceto. It is always represented on ancient medals as half-fish, half-woman, but the Hebrew writer or writers speak of it as a masculine being. Some scholars have attempted to show that the word Dagan comes from the Phœnician *dagan*, wheat; and that it is not the name of a fish-god, but of a god of agriculture. It is possible, however, to combine both notions, by supposing that Dagan was a deified mortal who had come in a ship to the coast, and taught the people agriculture and other useful arts. Ancient history abounds with such mythological personages, one of whom was called by the Babylonians *Odakon*.

DAGUERRE, *dâ-gär'*, LOUIS JACQUES MANDE: 1789—1851, July 12; b. Cormeilles, France: inventor. He went to Paris at an early age and became a successful scenic painter, then assisted Prevost in painting large panoramas of the great European cities, and while so engaged invented the diorama by which he imitated the changes of the day and season by throwing colored lights and shadows on his paintings. In 1826, he and Joseph Nicéphore Niepce

began experimenting to discover a means of securing true copies of objects by the sun's chemical action. The latter obtained a process 1829; both strove to perfect it, Niepce died 1833, D. made further improvements, and the perfection of the invention was announced to the French Acad. of Sciences 1839, Jan. The govt. granted an annuity of 6,000 fr. to D. and 4,000 fr. to Niepce's son on their making the invention public, and also made D. an officer of the Legion of Honor. The Daguerreotype, named from him, was the first successful application of the principle since largely developed in photography (q.v.).

DAGUERREOTYPE, n. *dā-gĕr'ŏ-tīp* [from *M. Daguerre* of Paris, the inventor, and *type*]: painting or portrait on metal formed by the decomposition of silver iodide by means of sunlight—the original photographic process, 1839. Notwithstanding that it has now become so unpopular, because of the very feature which gives such perfection to the result—viz , the polish of the plate—this process yields to none in microscopic perfection of detail and perfect gradation of shade. D. pictures are positive or direct, as given in the camera, though they appear also as negative when viewed at certain angles, and are the result of the successive action of the vapors of iodine, bromine, and mercury upon a highly polished surface of chemically pure silver. The manipulations in the process are: 1. Cleaning and polishing the plate; 2. Rendering the plate sensitive; 3. Exposing it in the camera; 4. Developing the latent image; 5. Fixing the picture.

A copper plate of moderate thickness is coated with silver by the electrotype or other suitable method, and then polished to the utmost possible degree, so as to obtain, though by mechanical means, a chemically pure surface; it is then exposed first to the vapor of iodine, then to the vapor of bromine for a period, ascertained in practice by watching the beautiful succession of prismatic colors which begin to appear with the first contact of the vapor. The length of exposure in the camera which follows is determined by the amount of light at the time of operating, and the relation between the diameter and focal length of the lens employed. The development of the latent image, which is the next operation, is effected by exposing the plate in a suitable box to the vapor of mercury, which attaches itself to the various parts of the picture in proportion to the more or less intense action of the light. Those portions of iodide and bromide of silver unacted on by light are next removed by immersing the plate in a solution of hyposulphite of soda; and the picture is subsequently fixed and intensified by pouring over its surface a solution of hyposulphite of gold, and applying heat; by which means it is coated with a thin film of metallic gold, and thereby rendered so permanent that it cannot be rubbed out by ordinary means, but requires a chemical solvent for its removal. Though M. Daguerre published, 1839, the first *practicable* process for taking pictures by the agency of light, his experiments seem to have been suggested by the researches of M. Niepce, who, 1820, obtained impressions on silver plates rendered

sensitive by exposure to the vapors of sulphur and phosphorus. See PHOTOGRAPHY.

DAGUPAN: a town of Luzon, Philippine Islands, where the Lingayen river enters the gulf of the same name; about 130 miles n.w. of Manila. After the outbreak of hostilities between the insurgents and the United States the military authorities of the latter determined to make Dagupan a base of operations. In 1899, Nov., the Americans drove the insurgents out of D. and then started on their memorable march to Aguinaldo's headquarters, at Tarlac. Pop. 16,000.

DAHL, *dâl,* JOHANN CHRISTIAN CLAUSEN: Norwegian landscape painter: 1788, Feb. 24—1857, Oct. 14; b. Bergen. He was at first intended for the priesthood, but turned to art. He studied painting for six years under the direction of Prof. J. G. Moller. His first attempts were in *genre* and miniature. Public attention was drawn by a work which he exhibited in Dresden 1819, *Cascade among Rocks in Norway.* Next year, he went to Italy, where Thorwaldsen and the Prussian consul-general, Bartholdy, commissioned him to execute several works. In 1821, he was appointed prof. of painting at Dresden.

DAHLGREN, *dăl'grĕn,* JOHN ADOLPH, U.S.N.: 1809, Nov. 13—1870, July 12; b. Philadelphia. He entered the U. S. navy as midshipman 1826, Feb. 1; was made passed midshipman 1832; commissioned lieut. 1837; commander 1855; capt. 1862, July 16; and rear-admiral 1863, Feb. 7. He became commandant of the Washington navy-yard 1861, Apr. 22; chief of bureau of ordnance 1862; commander-in-chief of the S. Atlantic blockading squadron 1863, July 6: in conjunction with Gen. Gilmore took possession of Morris Island, silenced Fort Sumter, and occupied Charleston harbor 1863; appointed commander-in-chief of the S. Pacific squadron 1866; chief of ordnance 1868; and commandant of the Washington navy-yard 1870.

DAHLGREN, ULRIC, U.S.A.: 1842–1864, Mar. 4; b. Bucks co., Penn.; son of Rear-Admiral D. He studied civil engineering and law; placed and took charge of a naval battery on Maryland Heights after the first battle of Bull Run, by his father's order; was Gen. Sigel's chief of artillery at the second battle of Bull Run; was aide to Gens. Sigel, Burnside, Hooker, and Meade; lost a leg at Hagerstown, Md., 1863, July, and was killed in a raid of his own planning to release the Union prisoners in Richmond. This gallant young officer's early death was recognized as a great loss to the army.

DAHLGREN GUN [named after Admiral John A. Dahlgren, U. S. navy]: a piece of large ordnance, the result of a careful series of experiments. One peculiarity consists in having relatively less metal in front of the trunnions, and more behind, than had been customary. Dahlgren guns, made to fire shells or hollow shot, have been largely introduced into the United States navy.

DAHLIA, n. *dā'lĭ-ă* or *dâl'ya:* genus of large perennial herbaceous plants of the nat. ord. *Compositæ,* sub-order

Corymbiferæ, natives of Mexico. All the varieties in cultivation, of which not fewer than 2,000 have been carefully enumerated, are derived from two species, *D. variabilis* and *D. coccinea*, chiefly from the former. Few plants manifest so strong an inclination to sport and produce new varieties as the D., and florists have obtained many also by the artificial fecundation of one with the pollen of another. Dahlias were first brought to Madrid by Spanish botanists in 1789, and were soon introduced into England, but did not become well known in English flower-gardens till about 30 years afterward. The name was given in honor of Dahl, a Swedish botanist; but because another genus of plants had received the same name, an attempt was made to change it to *Georgina*, which is sometimes used on the continent, but D. universally prevails both popularly and among botanists in Britain and America. Among the essential characteristics of a fine D., acccording to florists, are a fulness of the flower, a perfect regularity in the shape of the florets, and the absence of an eye or disk; the florets of the disk, as in other 'double' *Corymbiferæ*, having assumed the appearance of florets of the ray. Dahlias have tuberous roots, which contain considerable Dahline, or *Inulin* (q.v.), and are in use as food in Mexico. It was at one time attempted to introduce them into cultivation in Europe for the food either of man or of cattle; but the taste is nauseous to European palates, and even cattle do not readily eat them. Dahlias are liable in northern countries to be cut down by early frosts, in the very midst of their flowering; and their tubers require to be taken up for the winter, and stored in a dry place out of the reach of frost till spring. They are propagated by seed, by cuttings, and by tubers. The finer varieties are sometimes grafted on ordinary stocks.

DAHLIA-PAPER, a kind of paper made for the production of artificial flowers, especially dahlias.

DAHLMANN, *dâl'mân*, Friedrich Christoph: prof. of history and political science in the Univ. of Bonn: 1785, May 17—1860, Dec. 5; b. Wismar. His earlier studies in Copenhagen and Halle were in archeology and philology; but his attention was subsequently directed to the study of politics and the history of the middle ages. The results appeared in his *Vita Ansgarii*, his *Researches in German History* (2 vols. Altona 1822–3), his edition of the *Dithmarsh Chronicle* (Kiel 1827), and other works. In 1829, D. was appointed prof. of political science in Göttingen, where he published (1830) his valuable work on the *Sources of German History*. Banished 1837, by King Ernest of Hanover, on account of his protest against the abolition of the Hanoverian constitution, he went to Leipsic and Jena, where he wrote his historical masterpiece, *History of Denmark* (3 vols. Hamburg 1840–43) In 1842, he became prof. of history at Bonn, and was prominent in the political affairs of Germany after the movement in 1848, heading the constitutional liberals, who were unfortunately too reasonable to be successful.

THE DAHLIA.

DAHOMEY, *dâ-hō'mā:* negro kingdom under **French** protection, of Guinea, w. Africa, extending along the coast from the British colony of Lagos on the e. to the German colony of Togo on the w. Its limits have not been precisely defined, but it is usually regarded as extending back to the Kong Mountains. It will thus lie between lat. 6°—8° 50′ n., and long 1° 30′—3° e.; its breadth about 200, and its length 90 m. D. is for the most part a vast plain, rising with gentle ascent from the sea toward the Kong Mountains, with offsets of which it is traversed in its most northerly parts. Though it has no river of any importance, it is well watered by springs and streams; and the soil, a rich, red-colored clay, is extremely fertile. Magnificent trees clothe the hills in the north, and corn, beans, and peas grow in splendid luxuriance on the plains, as well as yams, potatoes, melons, limes, oranges, pine-apples, and other tropical fruits: cotton, sugar, tobacco, and indigo also are raised. The scenery is described as exceedingly varied and beautiful. Lions, tigers, elephants, hyenas, and enormous snakes of the boa kind abound. The Dahomans, who came into possession of this tract of country about the beginning of the 18th c., are for the most part tall, well-formed, and intelligent, and, for an African race, singularly honest, and far advanced in agriculture. With the exception of a few Mohammedans, whose religious belief is in no way interfered with, they all are pagans, and practice fetish-worship; and, until they were restrained by civilized nations, human sacrifices formed the chief feature of state ceremonies, 500 being commonly killed at the accession of a king. The king's army is noted for the presence in it of a body of Amazons who make very effective soldiers but are exceedingly ferocious. The brunt of the war with France 1889–93 was borne by the 2,500 Amazons, whose courage and cruelty seemed boundless. French interests in D. date from the first treaty, July 1, 1851, ceding to France a small piece of land surrounding a trading fort established the previous year. Treaties in 1868 and 1878 enlarged the French rights. By agreement with Germany, England, and Portugal, 1889, D. was acknowledged as being within the French 'sphere of influence.' King Gle Gle began war against France in 1889, which, with short intermissions, continued till the capture of his successor Benezin in Jan. 25, 1894. Another king, Guthili, was chosen, and the country has now become practically a French colony. Pop. about 250,000. See Forbes's *Dahomey and the Dahomans* (1851); Burton's *Mission to Gelele, King of Dahomey* (1864); Skertchly's *Dahomey As It Is* (1874); J. S. Keltie's *The Partition of Africa* (1893).

DAHRA, *dâ'râ:* district of Algeria, formerly inhabited by the Ouled-Riahs, a Kabyle tribe. It has acquired a melancholy celebrity as the scene of a frightful massacre by the French, 1845, June. The district contains immense caverns. In these the Ouled-Riahs, hotly pursued by the French under Col. (afterward Marshal) Pelissier, took refuge. They were ordered to surrender their arms and horses, and were promised, in return, life and liberty. On their refusal, fascines were made up, kindled, and placed

at the entrance of the caves. Thrice Col. Pelissier sent a flag of truce, exhorting the imprisoned Kabyles to accept his terms, but in vain—the last messenger being received with a discharge of musketry. The fire was therefore again kindled in all its intensity, and gradually the cries of agony from the interior of the caverns ceased, until nothing broke the dead silence but the occasional crackling of the green wood of which the fascines consisted. When the caverns were examined, about 600 dead bodies were found scattered here and there; but it was calculated that in all (including those who afterward died and those who could not be got at) about 800 had been suffocated by smoke, or gored to death by the maddened cattle whom they had brought with them into their fatal asylum. The news caused a great sensation in Paris. Marshal Soult, minister of war, formally condemned the deed; but Marshal Bugeaud, gov. of Algeria, affirmed that Pelissier had only acted under positive orders.

DAILY, a. *dā'lĭ:* see under DAY.

DAIMIEL, *dī-mē-ĕl':* town of Spain, province of Ciudad Real, 20 m. e.n.e. of the city of Ciudad Real. It is moderately well built; it has several squares, and its principal streets, though unpaved, are wide and comparatively clean. Its chief buildings are the churches of San Pedro and Santa Maria—the former a Doric, and the latter a Gothic, structure—a town-hall, and a hospital. D. is environed by fine public walks and gardens, and has manufactures of woolens, linen, blonde lace, etc. Pop. 10,000.

DAIMIO, *dī'mĭ-ō:* official title of the ancient feudal lords or princes of Japan. They had almost sovereign power in their respective provinces; but they have in recent years been fully reduced under the authority of the emperor. See JAPAN.

DAINTY, a. *dān'tĭ* [W. *dain*, fine, delicate: comp. Gael. *deanta*, perfectly formed, complete: Bav. *däntsch*, a delicacy (see DANDY)—*lit.*, so perfect in qualities as to delight one of the senses]: pleasing to the taste; delicious; delicate; effeminately beautiful; affectedly particular as to food; over-nice: N. something nice or pleasing to the taste or other sense; a delicacy; a term of endearment. DAIN'TINESS, n. *-nĕs*, nicety in taste; the being very fastidious to please; delicacy. DAIN'TILY, ad. *-lĭ*, in an over-nice fastidious manner. *Note.*—Skeat says DAINTY is from OF. *daintie*, agreeableness—from L. *dignĭtātem*, dignity; worth

DAIR-EL-KAMAR, *dīr-ĕl-kâm'ar*, or DEIR-EL-KAMR, *dār-ĕl kâm'r:* town in Syria, cap. of the Druses; about 13 m. s.s.e. of Beyrout. It is on the edge of a deep and picturesque glen of Mount Lebanon, the banks of which and the slopes above are richly clad with mulberries, olives, and vines, cultivated in terraces by an exceedingly industrious population. On the opposite side of the glen stand the ruins of the palace Bteddîn, formerly the residence of Emîr Beshîr, who, for more than half a century, 1788–1840, ruled over the Lebanon with a strong but impartial hand. Pop. of D. abt. 8,000.

DAIRY.

1. Dexter Heifer.
2. Ayrshire.
3. Group of Guernsey Calves.
4. Guernsey
5. Holstein.
6. Shorthorn.
7. Jersey Bull

DAIRY.

DAIRY, n. *dā'rĭ* [OE. *dey*, a female servant whose duty was to make cheese and butter, etc.; *deyry*, the place for carrying on her work: Icel. *deigja;* Sw. *deja*, a dairymaid: comp. Gael. *dair-thigh* = *dair-igh*, the building where cattle were protected and attended to—from *dair*, the breeding of cattle; *tigh*, a house; the old word *dey* (above) is probably allied to *dug*, a teat, and to Lat. *duc-*, to draw or to milk; in Polish, *doic* is to milk]: primarily the place in which milk is kept and made into butter and cheese, but in its wider and common signification including all that pertains to the production and management of milk on a farm. DAIRYMAID, n. a female servant engaged in the management of milk and its products. DAIRYMAN, n. a man who keeps cows and sells milk. DAIRY-FARM, a farm which depends almost wholly upon its cattle, and their milk. *Note.*—Skeat says, the older sense of DAIRY is kneader of dough, or baker-woman—from Icel. *deig;* Sw. *deg*, dough; the same maid attending the bread-baking and the milking.

In the United States the dairy business is an interest of rapidly increasing magnitude. It is estimated by the department of agriculture that there were, 1903. Jan. 1, over seventeen million milch cows on farms. In towns and villages, from one to two million cows are constantly kept for production of milk. At the extremely low estimate of 350 gals. av. annual yield per cow we have nearly six billion gals. of milk produced in this country every year. A little more than one-half is made into butter, more than one-third used as food, and nearly half a billion gals. are converted into cheese. Annual value of dairy products of the country far exceeds that of its enormous wheat crop, and in 1886 reached the grand total of $380,000,000. In 1900 the U. S. census reported 9,351 establishments for manufacture of butter, cheese, and condensed milk, with $36,491,799 capital and an annual production valued at $131,183,338.

Certain regions are much more favorable to dairying than others, but with skilful management and the use of improved methods the business can be successfully conducted in nearly all parts of the country. The section which, on account of its peculiar natural advantages, has been called the 'dairy belt' of the United States lies between the 40th and 45th parallels of latitude, extending from the Atlantic to the Mississippi and possibly as far west as the Pacific. Of this immense tract about one-third is specially adapted to dairy purposes. Among the requirements of a fine dairy region are a rich soil with good drainage, sweet and nutritious grass, and pure water in abundance. But land not specially adapted to the purpose can often be improved, fine varieties of grass can be introduced, and by skilful treatment many natural defects can be remedied. Improved methods of keeping milk and securing cream have greatly reduced the risks of the business, enlarged the area in which dairying can readily be made successful, and by causing improvement in the quality of the products has largely increased the profits. The dairy business is conducted not only as a separate industry, but also

largely in connection with general farming. This is an advantageous method, as the materials for feeding cows can be grown by the farmer more economically than they can be purchased, while the manure can be profitably used in the production of crops for maintaining the animals. Winter dairying can be very easily and profitably carried on with general farming, as a large proportion of the work required in the dairy can be done when little else can be done on the farm.

The breeds of cows especially valuable for dairy purposes are the Holstein-Friesian, Ayrshire, Jersey, and Guernsey. But there are others, as the Dutch Belted cows, the Devon, Alderney, Swiss, and some families of Shorthorns, which have many admirers and by some are considered superior to those generally regarded as the pure dairy breeds. Among the so-called 'natives,' descended from an excellent class of cows imported from Europe early in the history of this country, there are large numbers of cows which have been carefully bred for their milking qualities and are profitable for the dairy. Classed with the native stock are many thousands of grades of the improved breeds which are excellent milkers and which are nearly as sure as the thorough-breds to transmit their good qualities to their offspring. In point of numbers the native stock overwhelmingly predominates. Careful estimates based on the registration of the principal breeds indicate that the whole number of pure-bred cattle in the country is only about two hundred thousand. Of these the herd-books show that nearly one-third are bulls. Of the improved breeds the Holstein-Friesian greatly exceeds all others in the quantity of milk produced and is well adapted to the farms where cows are valued not merely for their milk but also for their capacity for making beef when their usefulness as milkers has ceased. The Ayrshires are excellent milkers and are valuable to cross with native stock. The milk of these breeds is superior for the production of cheese. The Jersey and Guernsey cows are noted for the high quality rather than the large quantity of their milk and are unexcelled for the production of butter as regards both quantity and quality.

The yield of milk varies greatly with the different breeds and with animals of the same breed. It is claimed that there are herds of Holstein-Friesian cows which give an average yield of 18,000 lbs. of milk yearly. Many Ayrshire herds give a yearly average of 5,000 to 8,000 lbs. per cow. Some of the best native cows yield from 4,000 to 5,000 lbs. yearly, but such instances are extremely rare. There are many herds in the fine dairy regions of New York which, according to the cheese-factory reports, yield little more than 3,500 lbs. of milk per cow in a year, while in less favorable sections a much smaller average yield is obtained. Such herds are unprofitable. The animals of which they are composed should be carefully tested, the poorer ones converted into beef at the earliest opportunity, and their places supplied with more productive cows. A much larger proportion of unprofitable cows is found

among the native stock than among the pure breeds, but there are occasional instances among the latter of wide departure from the ordinary type. It sometimes, though rarely, occurs that extremely poor milkers are found in the very best dairy breeds.

Success in the dairy business largely depends upon the selection of the cows. Even with the most perfect appliances and the best possible management a dairy in which a large proportion of the cows are poor milkers cannot be made a financial success. The cost of maintaining a cow which yields only 3,000 lbs. of milk annually is nearly and in some cases quite equal to that for a cow giving from 5,000 to 6,000 lbs., and the labor of caring for the animals is the same. Yet in the older sections of the country, where the dairy business has reached its highest development, it is estimated by careful observers that at least one-third of the cows do no more than pay the actual expense of keeping them. In less favorable locations the proportion of unprofitable cows is considerably larger. To the low productive capacity of a large part of the stock of dairy farmers may be attributed a large share of the losses of which many of them complain. The remedy lies in increasing the average yield of their cows. While an immediate change in the character of their stock cannot be made without great expense, a gradual, but rapid, improvement may easily be effected. The weeding out of the poorer cows, whether thorough-breds, grades, or natives, and the rearing of the most promising calves from the best milking stock, together with higher feeding and better care of the animals which are retained, will speedily and largely increase the yield and greatly improve the quality of the milk.

If superior cows are to be secured a large proportion of them must be raised on the farm. The best cows are seldom sold, and when they are in the market the price is usually so high that the average farmer or dairyman cannot purchase them. But by taking his best cows to a thoroughbred bull of the breed which seems best adapted to his special purpose, raising the heifer calves, feeding them liberally and caring for them in the best manner, the owner of a herd can in a few years obtain a fine and profitable lot of cows. But a rigid selection should be made and only the best of the heifers should be retained. The inferior ones should be converted into beef as soon as possible after their unfitness for the dairy has been demonstrated.

While good cows of different breeds will lack resemblance and will present the distinguishing marks of the particular race to which they belong, there are some peculiarities of form and feature common to all good milkers and indicating with considerable certainty their value for milk production. The principal of these points are a small head, dishing face, small and tapering horns, mild bright eyes, small thin neck, and light fore-quarters. The chest and hips should be broad and the abdomen large, indicat-

ing well developed heart and lungs and vigorous digestive organs; the back long and straight; the skin soft, loose and, particularly on the udder and the inside of the ears, of a yellow tinge; the tail small, and the hair soft and fine. The udder should be large; the teats set wide apart, and both the winding veins around the udder and the 'milk veins' passing from the udder forward and into the abdomen (which indicate the quantity of blood which circulates in the milk glands and from which the milk is secreted), should be very prominent. The larger the number of these points and the more clearly they are marked the greater the probability that the cow will be an excellent milker. The milking qualities are very likely to be transmitted, and the record of ancestry should always be considered. By many dairymen the form and extent of the escutcheon, or 'milk mirror' is regarded as much the most accurate and important of all the indications of the milking qualities, though many others place but little reliance upon its appearance. The discovery of this method of judging the value of cows for the dairy was made by a French herdsman named Francis Guenon. He observed that on the udder, thighs, and perineum (the space extending upward from the udder), the hair grows in a different direction from that on other parts of the body, and he became convinced that the size and form of this space, which he named the escutcheon, together with the quality of the skin and hair growing thereon, indicated with great precision the value of the cow for milking purposes. Guenon developed a very elaborate system which several years later he revised and simplified, though it remains quite complicated. The escutcheon is separated into ten different classes, each of which is divided into six orders, making 60 different forms of more or less favorable appearance. In addition to these, 10 'bastard' or imperfect styles are described. It is claimed that the size and form of the escutcheon indicate the quantity of milk which the cow will yield and the length of time in which she will give a fair quantity of milk after calving, while the quality of the product is shown by the color and softness of the skin and the condition of the hair on the 'mirror.' The system is applicable not only to cows but also to bulls and calves. In applying this, or any kindred system, the fact must be kept in mind that the extent and form of the escutcheon is necessarily modified by the size and peculiarities of the breed to which the animal belongs. A Jersey cow of the highest class being a much smaller and very differently formed creature, will have a much smaller escutcheon than a Holstein-Friesian or a Shorthorn of only moderate milking capacity. While it is probable that the indications of the escutcheon are not infallible, they may, in connection with the other points which have been noted, prove of considerable assistance in estimating the milking qualities of cows concerning which little or nothing is definitely known.

The period of gestation of the cow is about 285 days, varying, however, from 240 to 301 days. A male calf is

usually carried a few days longer than a female, and an old cow goes a little longer with calf than a heifer. In the case of Jerseys, the breeding periods often begin when the calf is only seven or eight months old, but in the larger and less precocious breeds they do not begin till the animal has reached the age of 12 or 14 months. Of late the tendency has been strongly toward early breeding; and instead of waiting, as was formerly the custom, until the animal is three years old before she drops her first calf it is not unusual for the best dairymen to have their heifers calve when two years of age. A period of about nine months is then allowed to pass before breeding again, thus bringing the second calf when the cow is three-and-a-half years old. This plan makes the heifer a source of income at an early age, and, what is far more important, causes a fuller development of the milk-producing tendency and greatly shortens the period in which she will go dry between the times of calving. The cow usually increases in value until she has had her third calf, and remains at her best for four or five years. Many cows which are well fed and cared for are very productive till the age of 15 or 18 years, but very old cows are not usually profitable as their milk is of poorer quality than that of younger ones and a much larger amount of food is required to produce a given quantity.

The calf should be removed from the cow very soon after it is dropped, tied with a strap, around its neck in a comfortable pen or stable, wiped dry, and in a short time fed with milk drawn from its dam. For a few days it should be fed two or three times a day with fresh, warm milk. During this time it can be readily taught to drink from a pail by allowing it to suck two or three fingers which should be immersed in the milk and gradually withdrawn when it begins to take its food freely. In four days the milk from the cow will be suitable for use in the dairy. If the calf is to be turned into veal it will require a large proportion of the milk of its dam until it is fattened, a period of from four to six weeks. Many dairymen allow the calf to suck the cow during this time, but it is better for the cow that she should not see the calf after they have been separated. The calf should be fed with warm milk morning and night. If the calf is to be raised it should be given new milk for four or five days when half the ration may be skimmed milk which should be mixed with that fresh from the cow, and the whole warmed to the temperature of new milk. When four or five weeks old a teaspoonful of oatmeal or oil meal may be given each day. The quantity should be gradually increased as the calf grows larger, but care must be taken not to over-feed. When two or three months old the calf will drink water, and should thenceforth be supplied with it regularly. If the weather is warm a small pasture near the barn should be provided. If cold, the calf should have a comfortable stable and be given a moderate quantity of fine hay. Milk should be fed for six or eight months, at the expiration of

which time the calf should be put in the stable with the cows. She should have an abundance of good food, but an effort should be made to promote growth rather than fattening. She should be handled frequently, taught to follow with a rope around the horns, and always be kindly treated.

While the selection of good cows of a suitable breed for the special line of dairying pursued (the production of milk, butter, or cheese), is a matter of very great importance, it is equally necessary that they should be well cared for, and receive a liberal quantity of food of the best quality. The improved breeds have been obtained by the skilful selection of animals for breeding, re-enforced by extra care and liberal feeding. It is only by continued attention to these points that the high standard which has been reached can be maintained. The neglect of either will result in rapid deterioration. As milk, like all other animal products, is derived from the food, it follows that the quantity and quality secreted will be largely determined by the food with which the cow is supplied. A certain quantity of food is required to repair the waste of the system and maintain the natural heat. If milk is secreted it must be derived from food which is supplied in excess of these requirements, or, if this is wanting, from the fat which has previously been stored in the body. In the latter case the cow loses flesh and yields but little milk. But if liberally supplied with suitable food the cow has more material than is necessary to maintain the animal functions, and converts the remainder into either milk or fat. Cows with a strong tendency to fatten should be turned over to the butcher as they are rarely good milkers. If milk is to be converted into butter the cows should be liberally fed with good hay, and receive in addition a few quarts of Indian meal or wheat bran, or, better, a mixture of the two. Cotton-seed meal, when carefully fed, is also of great value, but if too freely used it injures the cows and seriously impairs the quality of the butter. On the latter account its use is prohibited by many creameries which have high reputation for the quality of their products. Linseed-oil meal is also valuable if given in only small quantities, but is open to the objections made to cotton-seed meal, besides being, in proportion to its actual worth for the production of milk, somewhat more expensive. If the milk is to be made into cheese, the feeding of clover, bean or pea meal, and other substances containing a large proportion of nitrogen, will give better results. But such materials must be given in only moderate quantities, as an excess of nitrogenous matter in the food is liable to cause disease. Indian corn is valuable to feed green during the mid-summer months when the pasturage is deficient, and also to put into the silo for winter use. (See ENSILAGE.) Certain roots, as carrots and mangolds, also are very useful in winter. Turnips, however, are likely to impart a strong and unpleasant flavor to the milk and butter, and if fed at all should be in very small quan-

tities. As milk is 87 per cent. water, it is evident that cows should be supplied with pure water in abundance. A limited quantity of water, even if the quality is the best will certainly cause a small yield of milk, while impure water not only taints the milk, but is a prolific source of disease. Cows require protection from severe heat in summer and from excessive cold in winter. Shady pastures should be furnished during the former season, and warm but well ventilated barns in the cold weather. The stables should be kept clean and be made as comfortable as possible.

Milking should be done twice daily, by the same persons, and as nearly as possible at the same hours. A change of milkers or irregularity in the time of milking will diminish the yield. A large number of milking machines have been devised, but none of them have proved successful, while some have seriously injured the cows upon which they have been used. In cases of severe soreness of the teats the use of silver tubes until the sores are healed is beneficial, but their regular use is not to be commended The milk should be drawn by hand, gently, but as rapidly as possible and the milker should not stop until the udder has been entirely emptied. The greatest care as to cleanliness should be observed in drawing the milk. As it quickly absorbs bad odors it should be at once removed from the stable and carefully passed through a wire strainer and at least two thicknesses of dairy-cloth.

If the milk is to be set in open pans a cool and convenient milk room should be provided. An abundance of pure water and conveniences for regulating the temperature are indispensable. Another requisite when the milk is not at once removed from the farm is the use of ice in summer. By this means a larger quantity of cream can be obtained, and butter can be made in mid-summer of as good quality as in the most favorable season of the year. A small building for the storage of ice should be located near the milk room. (See Ice House.) When the milk is strained in open and shallow pans it is allowed to remain undisturbed until the cream has separated and risen to the top, the time required depending upon the temperature and being much longer in winter than in summer. When the separation is complete or, on account of the souring of the milk, has ceased, the cream is removed with a perforated skimmer and placed in earthen jars. Improved methods are rapidly taking the place of this way of securing the cream. These methods vary in some minor particulars but use either the principle of deep setting, or rapid cooling of the milk, or both combined. One of the leading systems is to strain the milk into cans 19 inches deep and 9 inches in diameter, and submerge them in water, which, by means of ice in summer, is constantly kept at a low and nearly uniform temperature. The tank in which the water is placed is lined with zinc and is made of the proper size to hold the number of cans required. The covers of the cans do not shut closely, but have flaring edges which project

about two inches below the top. When the can is submerged the air under the cover is condensed, and prevents water from reaching the milk while it allows the rapid absorption by the colder water of any odors which the milk may contain. Ice is put in the tank twice a day in summer and less often in cooler weather. The water needs to be occasionally changed. The temperature should be kept at about 45 degrees in warm weather, and 40 degrees, or a little below, in winter. This will insure the separation of the cream from the milk in 12 hours. If the temperature is much higher a longer period is required. By this system impurities from the air are excluded, the complete separation of the cream is effected, and both cream and milk are perfectly sweet when removed from the tank. The skimming is done by means of a faucet at the bottom of the can through which the milk is drawn. Somewhat similar systems which do not require the use of ice take a longer time for separating the cream, and need a larger number of cans for a given quantity of milk. By what is known as the centrifugal system the cream is separated from the sweet milk by mechanical action. The milk is placed in a cylinder which is caused to revolve about 1,200 times a minute. It is claimed that by this method the most complete separation can be effected, and that the cream is of better quality and can be more readily converted into butter than that obtained in any other manner. The quantity of cream in a given quantity of milk varies greatly with different cows, also with the milk of the same cow at different times. The latter variation is very perplexing to the dairyman and occurs often without apparent cause.

The plan of associated dairying devised in 1850 by Jesse Williams, who lived in the vicinity of Rome, N. Y., has revolutionized the methods of dairy management in large portions of the country. The establishment of cheese factories and creameries has given a powerful impetus to the business, effected a great saving of labor, diminished the liability of loss and secured a greater degree of uniformity in the product than was possible under the old methods. Where cheese is made, the milk is taken to the factory by the producer in large cans, once a day in winter and twice each day in summer. When butter is made, the factory employs a man to collect the cream. Each patron sets the milk in the same style of cans with gauges precisely alike. The cream gatherer calls each day, draws off the milk, marks the number of spaces or inches of cream indicated by the gauge in a book which he carries, and also on a card hung on the wall of the milk room, and places the cream in large cans which he delivers at the factory when his round is finished, together with the figures showing the quantity obtained from each patron Both cheese and butter factories usually pay their patrons once a month. When the milk is sold it is put into large cans, partially cooled, and taken to the shipping station every evening

The profits of dairying vary greatly with the location, the condition of the land and the market, the facilities for carrying it on, and the degree of skill with which the business is conducted. When the milk is taken from the farm there is a constant and considerable loss of nitrogen and phosphates, and consequently a rapid and continuous diminution in the fertility of the soil which can only be prevented or compensated by the application of manures or commercial fertilizers. When only the butter is sold and the skimmed milk is fed to the farm stock the loss to the land consists mainly of carbon, which can be replaced at slight expense. Whatever branch is pursued the dairy business requires a large amount of labor and close and constant attention. But the demand for dairy products of a high grade has, for many years, increased more rapidly than the supply, and will doubtless continue to do so. With a great and constantly enlarging foreign demand, and a rapidly extending domestic market for its products, the dairy business must continue to be a profitable branch of agriculture, and a source of great and permanent prosperity to the country at large.

DAIS, n. *dā'ĭs* [F. *dais* or *daiz*, a canopy over the head of a throne, the whole seat—from OF. *dois*, more rarely *dez* or detz: in *OF.*, *dais* meant a table—from L. *discus*, a round plate: comp. Gael. *dais*, a heap, a mow of hay or corn]: term used with considerable latitude by mediæval writers. Its most usual significations are the following: 1. A canopy over an altar, shrine, font, throne, stall, chair, statue, or the like. The term was applied to the canopy without regard to the materials of which it was composed, which might be cloth, wood, stone, metal, or other substance. 2. The chief seat at the high table in a hall, with the canopy which covered it, from which probably the word in all its significations was introduced, its French meaning being a canopy. 3. The high table itself. 4. The raised portion of the floor, or *estrade*, on which the high table stood and by which the upper was divided from the lower portion of the hall; and 5. A cloth of state for covering a throne or table.

DAISY, n. *dā-zĭ* [a corruption of *day's eye:* AS. *dægesége* a daisy, (*Bellis*)]: perennial plant, common in Europe. An emblem of fidelity in days of chivalry, and its beauties celebrated by Chaucer, Burns, and other poets; grown in gardens in U. S.; flowers white, with narrow petals tipped with delicate crimson. There are many varieties, of which 'hen and chickens,' in which several small flowers surround the main head, is the most peculiar. The plant is readily propagated by parting the roots. The western wild daisy, *B. integrifolia*, is found in the south-western states. Ox-eye daisy, *chrysanthemum leucanthemum*, originally from Europe, has been widely disseminated e. of the Mississippi, and is rapidly increasing westward. It is a perennial plant, stems one to two ft. high, each bearing a single flower at its top. Often there are several stems from one root. Flowers an inch or more in diameter, white, with a yellow disk in

the centre. It spreads rapidly, often overrunning mowings and pastures, and is difficult to eradicate. It can be exterminated by plowing and clean cultivation, followed by liberal manuring and heavy seeding with grass and clover. Close grazing by sheep will keep it down in pastures. In many eastern cities immense quantities of the flowers are used in summer for bouquets and decorations. They are grown also under glass and sold by florists during the winter. See CHRYSANTHEMUM. DAI'SIED, a. *-zĭd*, full of or adorned with daisies.

DAI'SY, MICHAELMAS: see ASTER.

DAISY-MAT: a wool mat made in a wooden frame with round fluffy balls resembling daisies.

DAK, n. *dâk*, or DAWK, n. *dawk* [Hind. *dâk*]: a mode of travelling by post in the East: see DAWK.

DAKOIT, or DACOIT, n. *dăk'oyt* [Beng. *dakhe*, a robber]: in the *E. Indies*, one of a class of highway robbers in n. India who act in gangs: formerly the native sovereigns often employed them in war. They did not scruple at murder for the sake of plunder. Much has been done by govt. in British India to break up these bands; but in Bengal and Burmah some still remain. DAKOI'TY, n. *-koy'tĭ*, the act or practice of gang robbery.

DAKO'TA (or JAMES) RIVER: water-course of Dakota, see DAKOTA.

DAKOTAS, or SIOUX: see SIOUX: INDIANS.

DALAI-LAMA: see LAMAISM.

DALAMOW, *dâl'a-mow:* city of Oude, on the left bank of the Ganges; 68 m. above Allahabad; lat. 26° 4′ n., long. 81° 7′ e. Dalamow has long been regarded as a holy place in connection with its sacred river, having two antique temples of Siva on the margin of the stream, and an ancient ghat or stair for aiding the ritual ablutions of the pilgrims. Pop. abt. 6,000, of which only 250 are said to be Mohammedans.

DALARADIA: ancient name of a territory in Ireland which comprehended what is now the s. half of the county Antrim, and the greater part of the county Down. It was sometimes called *Cric na Cruithne*, 'the region of the Picts,' from the Irish name of its inhabitants, otherwise called the Dal Araidhe, 'the race of Fiacha Araidhe,' a chief or prince of Ulster, said to have lived about A.D. 236. The name continued in use till the end of the 12th c. It must not be confounded with DALRIADA (q.v.).

DALBERG, *dal'bĕrch*, KARL THEODOR, Baron von, Chamberlain of Worms and Archbishop of Regensburg: 1744, Feb. 8—1817, Feb. 10; b. Hernsheim. He studied in Göttigen and Heidelberg, and after some time passed in travel, devoted himself to the priesthood. At Erfurt, of which he was appointed gov. 1772, he was active and generous as a patron of literature and art, and also contributed greatly to the social and commercial welfare of the little state. After holding several high offices in the church, Dal-

berg was sent to Paris (1804), to assist in adjusting several ecclesiastical affairs with Napoleon and Pope Pius VII. He died at Regensburg. Dalberg was as highly respected as a ruler and a scholar as for his private character. During his whole life, he cultivated the friendship of those eminent in literature and art, such as Goethe, Schiller, Wieland, etc. His writings—marked by sound learning and eloquence of style—include a treatise *On the Influence of the Arts and Sciences on Social Order* (1793) and *Pericles, or the Influence of the Fine Arts on the Public Welfare* (1806). These were his favorite objects of study; but natural history, chemistry, botany, mineralogy, and agriculture also engaged his attention.

The DALBERG (formerly DALBURG) family, of which Baron Karl Theodor was the most conspicuous member, was an ancient and noble German family, of which several members held, by hereditary right derived from the oldest times of the middle ages, the office of chamberlain to the archbishopric of Worms. So great was the renown of the Dalberg family, that at every coronation of a German emperor the royal herald exclaimed: 'Is there no Dalberg here?' whereupon the representative of the family kneeled, and received from the new emperor the dignity of 'first knight of the empire.' Several members of this family have been celebrated as patrons of literature and art.

DALBERGIA, *dăl-bĕrg'ĭ-a:* genus of trees and climbing shrubs of the nat. ord. *Leguminosæ,* sub-order *Papilionaceæ* having a stalked membranous pod, which is flat, tapers to both ends, and contains 1–3 flat seeds. The leaves are pinnate, with a terminal leaflet. All the species are natives of warm climates. Some are valuable timber-trees, particularly the SISSOO of Bengal (*D. Sissoo*), much prized, and more extensively used in the n. of India than any other timber-tree except the Sal (q.v.). *D. monetaria,* native of Surinam, yields a resin very similar to Dragon's Blood.

DALE, n. *dāl,* or DELL, n. *dĕl* [Icel. *dalr,* a dale, a valley: W. *twll,* a hole, a pit: Dan. *dal;* Goth. *dal;* Ger. *thal,* a valley]: a hollow where water collects and runs; the low ground between hills; a vale or valley. DALES'-MAN, n. one who resides in a district of hills and dales.

DALECARLIA, *dâ-lā-kar'le-â,* or DALARNE, *dâ'lar-nĕ* ('valley-country'): old province of Sweden, now forming the län county of Fahlun or Falun (q.v.). The Dalecarlians are celebrated for the part they took under Gustavus Vasa in freeing their country from the yoke of Christian II. of Denmark.

DALGARNO, *dăl-gar'no,* GEORGE: abt. 1626–1687, Aug. 28: b. Aberdeen: author. He studied at Marischal College, afterward kept a school in Oxford 30 years, where he died. He is notable for two works—the *Ars Signorum, Vulgo Character Universalis et Linguæ Philosophica* (Lond. 1661), and *Didascalocophus, or the Deaf and Dumb Man's Tutor* (Oxf. 1680). The former is a very ingenious attempt to represent and classify ideas by specific arbitrary

characters irrespective of words. It contains the germs of Bishop Wilkins's subsequent speculations on a 'real character and a philosophical language.' Leibnitz has repeatedly alluded to it in complimentary terms. The latter work has for its design 'to bring the way of teaching a deaf man to read and write as near as possible to that of teaching young ones to speak and understand their mother-tongue.' Dalgarno has the great merit of having anticipated, by more than 130 years, some of the most profound conclusions of the present age respecting the education of the deaf and dumb.

DALHOUSIE, *dăl-hô'ze*, Marquis of, James Andrew Broun-Ramsay, Governor-general of India: 1812, Apr. 22—1860, Dec. 19; b. at Dalhousie Castle, Midlothian; third son of the ninth Earl of Dalhousie. He was educated at Harrow, and graduated at Christ Church, Oxford. In 1836, he married the eldest daughter of the eighth Marquis of Tweeddale; in 1837, was elected for Haddingtonshire. On the death of his father, 1838, he succeeded to the earldom of Dalhousie, and became a member of the upper house. In 1843, he was appointed, by Sir Robert Peel, vice-pres. of the board of trade, and in 1845 succeeded Mr. Gladstone as pres. of the board. The 'railway mania' threw an immense amount of labor and responsibility upon his department; and his energy, industry, and administrative ability, and his readiness and fluency in parliament, marked him out for the highest offices in the state. When Sir Robert Peel resigned office 1846, Lord John Russell, who succeeded him, paid the Earl of Dalhousie the rare compliment of asking him to remain at the board of trade, in order to carry out the regulations that he had framed for railway legislation and intercommunication. In 1847, he was appointed gov. gen. of India, successor to Lord Hardinge, and arrived in Calcutta 1848, Jan. 12,—the youngest gov.gen ever sent to that country. His Indian administration was not less splendid and successful in acquisition of territory than in development of the resources of the country and improving the administration. Pegu and the Punjab were conquered; Nagpore, Oude, Sattara, Jhansi, and Berar were annexed—altogether, four great kingdoms, besides a number of minor principalities, were added to the dominions of the queen under his gov. generalship. Railways on a colossal scale were planned, and partly commenced; 4,000 m. of electric telegraph were spread over India; 2,000 m. of road between Calcutta and Peshawur were bridged and metalled; the Ganges canal, the largest of the kind in the world, was opened; the Punjab canal was undertaken; important works of irrigation all over India were planned and executed, and the official department of public works was re-organized. Among the incidents of his beneficent administration were the permission to Hindu widows to marry again; relief to persons of all sects from the risk of forfeiting property by a change of religion; the improvement of education and of prison-discipline; the

organization of the legislative council; the improved training of the civil service, convenanted and uncovenanted; and the reform in the postal service of India, whereby a letter from Peshawur to Cape Comorin, or from Assam to Kurrachee, is now conveyed for three farthings, one-sixteenth of the old charge. Dalhousie's constitution had never been strong, and it gave way under the incessant labor and responsibility of his high position. Meanwhile, honors had been showered upon him by his queen and country with no sparing hand: in 1848, he was made a knight of the Scottish order of the Thistle; in 1849, he received the marquisate, the thanks of both houses of parliament and of the E. India Company, for his 'zeal and ability'; in 1852, on the death of the Duke of Wellington, he was nominated by the then prime minister, the Earl of Derby, to the office of constable of her Majesty's castle of Dover, and lord warden of the Cinque Ports. Dalhousie sailed from Calcutta 1856, March, and, after much physical suffering, died at Dalhousie Castle in his 48th year, leaving a name among the highest in the roll of Indian viceroys for statesmanship, administrative vigor, and the faculty of inspiring confidence.

DALHOUSIE, New Brunswick, capital of Restigouche County, and a port of entry. It is situated on Chaleurs Bay and the estuary of Restigouche River. The chief industries are fishing and trading in lumber, salmon, and lobsters. Pop. (1901) 3,000.

DALHOUSIE, College and University, an institution of learning located at Halifax, N. S. It was founded in 1818 by the Rt. Hon. George Ramsay (q.v.), 9th earl of Dalhousie, whose last public act in Nova Scotia was the laying of the corner stone of the old building, 1820, May 22, but it was not until 1821, Jan. 13, that the 'bill to incorporate the Governors of Dalhousie College at Halifax' became a law. The purpose of the college as originally stated was 'for the education of youth in the higher branches of science and literature,' and 'to be open to all occupations and sects of religion.' The first name of Dalhousie was the 'College of Halifax,' but in 1821 the legislature granted £1,000 to the new college and named it after its founder. In 1841 university powers were granted to the college. The early history of Dalhousie is a brave struggle for existence. Two attempts were made to unite it with King's College (q.v.), but both proved failures. From 1844 to 1863 Dalhousie ceased to operate as a college, and the governors either allowed the funds to accumulate or managed it as a high school. In 1863, the college was reorganized, with a staff of six professors, a tutor in modern languages, and about 60 students The governing powers of the institution are (1) the board of governors, the supreme governing body; appointments to it are made by the governor-in-council on the nomination of the board. The governors have the management of the funds and the property of the college; the power of appointing the president, professors, and other officials, and of determin-

ing their duties and salaries, and the general oversight of the work of the university. (2) The Senate, consisting of the presidents and professors. To this body are entrusted, by statute, the internal regulations of the university, subject to the approval of the governors. All degrees are conferred by the Senate. (3) The faculties of Arts, Science, Law, and Medicine. These are committees of the Senate for the supervision of the teaching of the university, the preparation of regulations governing the courses of study, and the recommendation of suitable candidates for prizes, scholarship, diplomas, and degrees. In addition to the courses in the liberal arts and in pure science, the university has schools of law, medicine, and engineering. The university is well equipped for its work and is constantly enlarging its sphere of usefulness. It has a large student body and admits students of either sex. Many generous gifts have been made to Dalhousie, notably those of the late George Munro of New York, from 1879 to 1884, which did much to put the institution on a solid financial basis. Alexander McLeod, of Halifax, Sir William Young, and John P. Mott have also made large gifts.

DALIAS, *dâ'le-âs:* town of Spain, province of Almeria, 20 m. w.s.w. of the city of Almeria, about 4 m. from the Mediterranean. It is badly and irregularly built, and is subject to earthquakes. The people are employed chiefly in mining, smelting, and fishing. Pop. abt. 9,000.

DALKEITH, *dăl-kēth':* burgh of barony, 6 m. s.e. of Edinburgh, near the junction of the North and South Esk; a station of the North British railway. It consists chiefly of one main street. It has one of the largest corn-markets in Scotland; has a large and commodious market-hall, erected 1854; manufactories of brushes, woolens, and hats, besides iron-foundries, tanneries, and coal-works. Dalkeith arose round an ancient castle, long a great stronghold. The regality of Dalkeith was successively held by the Grahams, the Douglases, the Earls of Morton, and the Earls of Buccleuch—the latter having bought it from the Mortons 1642. During the minority of James VI., Dalkeith Castle was the chief residence of the regent Morton; hence it was called the Lion's Den. General Monk lived in it during his government of Scotland under Cromwell. Dalkeith Palace, chief seat of the Duke of Buccleuch and Queensberry, built about 1700 on the site of the old castle, is a large square structure overhanging the North Esk, amid fine grounds, in which the two Esks flow and unite. There are about a dozen places of public worship. Besides the old parish church, there is another, a fine cruciform structure in the early English style, built (1840) and endowed by the Duke of Buccleuch. An Episcopal chapel stands within the palace grounds. Dalkeith possesses several good public and private schools. The Dalkeith union workhouse, opened 1849, was the first in Scotland. Pop. about 7,000.

DALKISSORE, *dâl'kĭs-sōr:* river of Bengal Proper, joining the Hoogly from the right at Diamond Harbor, about 30 m. below Calcutta. It has a s.e. course of about 170 m., rising in lat. 23° 30′ n., and long. 86° 34′ e. In its lower section, the Dalkissore assumes the name of the Roopnerain. That channel of the Hoogly which receives the Roopnerain has of late years become silted up through the same cause to which the adjacent delta owes its existence. Moreover, as the tide sets strongly into the Roopnerain, as offering less resistance to its progress, many vessels bound to Calcutta have been swept up the shallow estuary and lost.

DALLAS, *dăl'as,* city, capital of Dallas co., Texas, on Trinity River just below the mouth of Elm Fork, and on the Houston & Texas Central, the Texas & Pacific, the Missouri, Kansas & Texas, the Texas & New Orleans, and the Gulf, Colorado & Santa Fé R.R.'s. It is in the midst of a fertile agricultural region, in which the chief products are cotton, corn, wheat, and fruits. The government of the city is vested in a mayor and 12 alderman, elected biennially, and commissioners appointed by the mayor.

Manufactories.—The industries include a number of flour-mills, lumber mills, manufactories of cotton-gin machinery, and saddlery, a brewery, various iron and metal works, grain elevators, woolen-mills, cotton-seed oil mills, and cotton compresses. The wholesale trade is large and embraces all lines of goods, and the city is a distributing centre for farm machinery and implements. The total wholesale trade for 1903 was in excess of $50,000,000, and the retail trade was the largest in the Southwest.

Municipal Interests.—The city owns and operates its water-works, which were erected at a cost of about $1,500,000. The chief public structures are the county court-house, Federal building, city hall, and Carnegie Public Library.

Schools, Colleges, and Libraries.—The public free school system embraces 12 white and 5 colored schools, at which 8,000 pupils attend, 2 parish schools and 7 suburban schools. Other schools are, Saint Mary's Female College (P.E.), Ursuline Academy, Academy of the Sacred Heart, Saint Mathew's Grammar School, Southwestern University (Med. Dep.). Baylor University (Med. Dep.), Physio-Medical, Dallas Medical, Patton Female Seminary, Landon Conservatory of Music; several business colleges, and special and private schools. The Carnegie Public Library cost $50,000.

Finance and Banking.—The city has five national banks, with capital and surplus amounting to $2,418,000; deposits, $10,827,324; one private bank; one trust company, capital $500,000; and 13 savings and loan companies.

Churches and Charities.—Dallas is the see of the Roman Catholic and the Protestant Episcopal dioceses, and the official home of a bishop of the Methodist Episcopal Church (South). There are nearly 90 church edifices, including

20 for colored people; and 12 to 15 charitable institutions. Pop. (1900) with recent addition of 1½ miles in area, 46,268; (1910) 92,104. The state headquarters of the Salvation Army are located here.

DALLAS, Alexander James: 1759, June 21—1817, Jan. 14; the island of Jamaica: lawyer. He was educated in Edinburgh and London; removed to Philadelphia 1783; was admitted to the bar 1785; appointed sec. of Penn. 1791, 93, 96; U. S. dist. atty. 1801; sec. of the U. S. treas. 1814; sec. of war *pro. tem.* 1815; and retired from public life 1816. As sec. of the treas. he urged the establishment of a national bank, negotiated a large loan advantageously, and brought the value of U. S. treas. notes to par; and as sec. of war superintended the reduction of the army. He published many historical, legal, and financial works.

DALLAS, George Mifflin: statesman: 1792, July 10—1864, Dec. 31; b. Philadelphia; son of Alexander J. Dallas. He graduated at the College of N. J. 1810; was admitted to the bar 1813; the same year became private sec. to Albert Gallatin (q.v.); appointed dep. atty.-gen. for Philadelphia co. 1817; elected mayor and appointed U. S. atty. for the Philadelphia district 1829, elected U. S. senator to fill vacancy 1831; was atty.-gen. of Penn. 1833–35; U. S. minister to Russia 1837–39; vice-pres. of the United States under James K. Polk 1845–49; U. S. minister to Great Britain 1856–61; and retired from public life on his return home. He was tall and of venerable aspect, and had many of his speeches published. His principal published writings were posthumous, and include a *Series of Letters from London* (1869), and a *Life of A. J. Dallas* (1871).

DALLES, The, or DALLES CITY, Ore., county seat of Wasco County; on the Oregon railroad. It is about 30 m. n.e. of Mount Hood, and on that portion of the Columbia River (on the Washington State boundary line) where the scenery is noted for grandeur. It is situated in a sheep and cattle-raising country, hence its trade is largely in cattle and wool. Fruits grow here in the Columbia Valley. Its chief industries are flour and grist milling, and wool scouring. A military post at Fort Dalles was established in 1838, and about the same time a mission was opened by the Methodist Church. The railroad station is known by the name of Dalles, and the local name often used is Dalles City; but the name of the post-office is The Dalles. Pop. (1900) 3,542; (1910) 4,880.

DALLIANCE: see under Dally.

DALLING AND BULWER, Baron: see Bulwer, Sir Henry Lytton.

DALLY, v. *dăl'lĭ* [Icel. *dvala*, to delay: Dut. *dwalen*, to err: Ger. *dalen* or *dahlen*, to chatter, to trifle: Westph. *dalen*, to speak or act childishly: comp. Gael. *dail*, delay]: to lose time by trifling; to fondle; to play with caressingly; to put off; to amuse for the purpose of delay. Dal'lying,

imp. DAL'LIED, pp. *-lĭd.* DAL'LIER, n. *-lĭ-ẽr,* one who. DALLIANCE, n. *dăl'lĭ-ăns,* acts of toying fondness between males and females; act of trifling; a lingering. DILLY-DALLY, v. to waste time in trifling.

DALMATIA, *dăl-mā'shĭ-a:* narrow strip of territory, extending along the Adriatic Sea; bounded on the n. by Croatia, on the e. by Bosnia, Herzegovina, and Montenegro; lat. 42° 15′—44° 54′ n., long. 14° 30′—19° e. It forms, with its adjacent islands, the most s. province of the Austrian empire. Area, 4,940 sq. m.; pop. (1900) 593,783. The coast of Dalmatia is everywhere steep and rocky, and the adjacent islands, divided by picturesque straits and channels, are of like character. Numerous bays intersecting the coast form excellent havens and landing-places. Offsets from the Dinaric Alps traverse the interior, and attain in Mount Orien, the highest culminating point, 6,332 ft.: the Velebich Mountains, separating Dalmatia from Croatia, and which belong to the Julian Alps, have a height of more than 5,000 ft. The mountains of Dalmatia, for the most part limestone, present a bleak and barren aspect, with many romantic chasms and fissures, through which dash impetuous mountain-streams. The chief rivers—none of importance—are the Zermagna, Kerka, Cettina, and Narenta, the second and third of which are broken in several places by beautiful cascades and falls. The lakes are numerous, but, with the exception of Lake Vrana—separated from the Adriatic by only a narrow tongue of land, and the waters of which are brackish—they are periodical, drying up in summer, and refilling their beds in late autumn. A large part of the whole area of Dalmatia is moor and morass, yet in summer there is often scarcity of water. The climate is in general warmer than that of any other part of Austria, the African sirocco being occasionally felt on its shores. The minerals are limestone, coal, gypsum, etc. Agriculture is backward. About one-ninth of the land is arable, and produces wheat, barley, oats, maize, rye, and potatoes. Wine and olives also are produced. More than half of the land is in pasture, and wood occupies about a fifth. The islands are not very fertile, but supply good timber for ship-building. Cattle-rearing, seafaring, and the fisheries on the coast, are the chief industries. The exports are principally of wine, oil, brandy, hides, wool, wax, honey, and fruits. Dalmatia was in 1867 attached to the *Austrian* half of the Austro-Hungarian monarchy, though the Slavonian inhabitants would have preferred a closer union with Croatia and Slavonia. Of the whole population (527,426) about one-ninth are Italians, 1,000 Albanians, 1,000 Germans, 500 Jews, and the remainder Southern Slavonians—chiefly Dalmatians and Morlaks. The Dalmatians are a fine race of men—bold and brave as seamen and soldiers, with great love of independence—and formerly were the main support of the military power of Venice. But they are deceitful and rapacious. They speak the Illyrian-Servian or Herzegovinian dialect; but the language used in the

govt. offices, especially in Spalatro, is the Italian. The Morlaks—who inhabit the interior, the mountainous districts, and the Turkish sanjak of Hersek—also are good soldiers, hospitable and faithful to their engagements, lovers of independence, but, it is said, addicted to robbery and drunkenness. Dalmatia is divided into four circles—Zara, Spalatro (or Spalato), Ragusa, and Cattaro. These are also the names of the chief towns. The majority of the inhabitants are Roman Catholics, but there are also a considerable number of Greek Catholics. Education is generally diffused by the system of national schools, but it is of a very elementary character.

In ancient times, Dalmatia was a considerable kingdom, and, after many unsuccessful attempts, was first subjugated by the Romans in the time of Augustus. After the fall of the Western Empire, Dalmatia, which had formed the most s. part of the province Illyricum, was captured by the Goths, from whom it was taken by the Avari (490), who in their turn yielded it to the Slavonians about 620. The state founded by the Slavonians continued until the beginning of the 11th c., when King Ladislaus of Hungary incorporated a part of Dalmatia with Croatia, while the other part, with the title of Duchy, placed itself under the protection of the Venetian republic. The Turks afterward made themselves masters of a small portion; and by the peace of Campo-Formio (1797), the Venetian part of Dalmatia, with Venice itself, became subject to Austrian rule; and when Austria, 1805, had ceded this part of Dalmatia to Napoleon, it was annexed to the kingdom of Italy; afterward (1810) to Illyria. Since 1814, Dalmatia forms part of Austria; Spizza being added by the Congress of Berlin, 1878. A partial insurrection broke out against the government in October, 1869, but was suppressed in the February of the following year. Dalmatia has a diet of its own of 43 members; and it sends 11 deputies to the Austrian House of Representatives. See CROATIA.

DALMATIAN, a. *dăl-mā′shan:* of or pertaining to Dalmatia: N. a native or inhabitant of Dalmatia (q.v.).

DALMATIC, n. *dăl-măt′ĭk*, or DALMAT′ICA, n. *-ĭ-kă* [said to be a dress originally worn in *Dalmatia*]: deacon's robe, in the Rom. Cath. Church. It was originally of linen, but it is now generally made of the same heavy silk as the planeta (q.v.), worn by the priest.' It is open at each side below the insertion of the sleeves, which are wide. It is the principal vestment worn by the deacon in the Roman Catholic Church when ministering at the Mass, or in processions and in other functions. It is also worn under the chasuble, by bishops, when they celebrate the Mass pontifically; and it is a part of the vesture of a king both in England and in continental European countries. It is commonly of silk; its color varies according to directions of the ritual. The dalmatic was originally a long undergarment of white Dalmatian wool, but little different from the Roman tunic, and not till the fourth century was it a distinctively ecclesiastical garment. At first it was worn

only by the Roman deacons, but later its use extended throughout the whole Church. So, too, the use of the dalmatic as part of the solemn attire of bishops was at first restricted to the Pope, but afterward was conceded to all bishops. In the Greek Church a vestment answering to the dalmatic, called stoicharion, is worn by deacons in solemn functions, and in the same Church the celebrating priest wears the stoicharion under the chasuble; but in this case the garment is always white. The two stripes, usually on the dalmatic, were originally purple, that is a shade near scarlet, and were probably a survival of the *latus clavus* of the tunic of senators.

DALNY: a port of Russia at the e. terminus of the Siberian railroad; connected with St. Petersburg by the Central Manchurian railroad; has one of the finest deep-water harbors on the Pacific, as it is free from ice, and ships drawing 30 ft. can enter at low tide without difficulty. The bay is many miles in extent and the deep water area is sufficient to accommodate the shipping of all Europe. Dalny is a city built by the government especially for commercial purposes, and was opened as a free port to the commerce of all nations, 1901, Dec. 1. According to the plan that is being followed the harbor is to have five large piers, supplied with warehouses, railway tracks, electric lights, and elevators, with a large and substantial breakwater across the pier heads, and two great dry-docks for the use of large merchant vessels and warships. The Russian government up to 1901 had spent $6,180,000 in constructing the harbor and city, and the completion of the harbor was expected to cost $11,845,000 more. The port will have no custom-house, but will be absolutely free, not even the small rates of Chinese customs being charged on goods being imported or exported. For the encouragement and development of commerce only the lowest possible rates will be required for tonnage, and the use of docks, wharves and warehouses. The policy of low charges, the easy access to the harbor during all seasons of the year, the small labor needed to transfer goods from the ocean steamers to the cars, and the cheap coolie service will combine to make this the most economical shipping port in the Occident. Pop. (1901) 50,000.

DALRI'ADA: ancient name of a territory in Ireland, comprehending what is now called 'the Route,' or the n. half of county Antrim. It signifies primarily, 'the race of Riada'; secondarily, 'the county of the race of Riada,' i.e., Cairbre Righfada, or 'Cairbre of the Long Arm,' the son of a chief or prince of the Scots in Ireland, a warrior of note. He lived in the 3d c., and not only obtained ascendency in the district of Ireland which was called after him, but, according to some writers, planted a colony of his Scottish countrymen on the shores of Argyleshire in Alba, or Albany, as Scotland was then called. It is certain that, about 506, some of his descendants, led by Loarn, Fergus, and other sons of Eric, son of Muinreamhar, passed over to Argyleshire, where they settled themselves permanently,

and founded the kingdom of 'Dalriada in Albany,' or 'the Scots in Britain.' More than 20 kings of this state are enumerated before Kenneth MacAlpin, who, about 843, united under one sceptre the Dalriads, or Scots, and the Picts, and thus became the first king of Albany, which about two centuries afterward began to be known as Scotia or Scotland.

DALRIADS, *dăl'rĭ-adz*, or DALREUDI'NI: inhabitants of DALRIADA (q.v.).

DALRY, *dăl-rī':* town of Ayrshire, Scotland, on the Garnock, 20 m. s.w. of Glasgow. D., until 1850, a small village, has increased in population in consequence of the establishment of iron-works at and near it. It has also a large woolen mill. Pop. (1851) 2,706; (1861) 4,232; (1871) 5,214; (1881) 5,010; (1891) 4,572.

DALRYMPLE, *dăl'rĭm pl*, ALEXANDER, F.R.S., F.S.A.: 1737, July 24—1808, June 19; b. at New Hailes, the seat of his father, near Edinburgh; great-grandson of Viscount Stair, and younger brother of Sir David D. In 1752, he obtained an appointment in the E. India Company's service; but young Dalrymple, then between 15 and 20 years of age, unluckily for his own prospects, fell upon some papers in the secretary's office relating to the commerce of the Eastern Archipelago, and became so engrossed with the importance of the subject that, after a period of bickerings with his superiors, he relinquished his appointment; and made a voyage of observation among the eastern islands. At Sooloo, in the course of his expedition, he concluded a commercial treaty with the sultan, but on his return in 1762, he found political affairs entirely changed, and his scheme proved a failure. In 1765, he returned to Britain, to urge its importance on the home-authorities, but did not succeed. In 1779, he was appointed hydrographer to the E. India Company, and shortly after received a pension. In 1795, when the admiralty resolved to establish a similar office, it was conferred on D., who held it till near his death at Marylebone, London. He wrote a vast number of letters, pamphlets, etc., containing plans for promotion of British commerce in various parts of the world, political dissertations, accounts of geographical expeditions, etc. His library was rich in works of navigation and geography, all of which were purchased by the admiralty. His collection of poetry, also very valuable, was deposited in the library at New Hailes, as a family heirloom.

DALRYMPLE, Sir DAVID, commonly known as Lord Hailes: Scottish judge and antiquary: 1726, Oct. 28—1792, Nov. 29; b. Edinburgh; grandson of Sir David D., who was youngest and reputedly the ablest son of Viscount Stair. He was educated first at Eton, afterward at Edinburgh, finally at Leyden, whence he returned to Scotland 1746. In 1748, he was called to the Scottish bar. In 1766, he was appointed one of the judges of the Court of Session, assuming the title of Lord Hailes. He was accurate, diligent, impartial, and dignified.—Although D.'s official

duties were very arduous, he found time to compose numerous works of value: among them are *A Discourse on the Gowrie Conspiracy* (1757); *Memorials and Letters relating to the History of Britain in the Reign of James I.* (1762), a curious and interesting volume; *The Works of the ever-memorable John Hailes of Eton, etc.* (1765); *Memorials and Letters relating to the History of Britain in the Reign of Charles I.* (1766); *Annals of Scotland from the Accession of Malcolm III., surnamed Canmore, to the Accession of Robert I.* (1776); and *Annals of Scotland from the Accession of Robert I., surnamed the Bruce, to the Accession of the House of Stuart* (1779). Besides these, Dalrymple wrote works on legal antiquities and ancient church history, edited old Scotch poems, and published sketches of the lives of various notable Scotchmen.

DALRYMPLE, James, Viscount Stair: lawyer and statesman; 1619, May—1695, Nov. 25; b. Drummurchie, Ayrshire; son of a small proprietor; of a very old and illustrious Scottish family, named from the lands of D. in Ayrshire. He was educated at Glasgow Univ., and, at an early age, entered the army raised in Scotland to repel the religious innovations of Charles I. But the bent of his mind lay toward civil and literary pursuits; and, in 1641, he was appointed prof. of philosophy at Glasgow. The use which he made of philosophy, however, was rather to aid him in basing law—his favorite study—on profound and comprehensive principles, than to add another metaphysical system to those already in existence. In 1648, he entered as an advocate at the Scotch bar, where he rapidly acquired distinction; in 1649, and again in 1650, he was appointed sec. to the commissioners sent to Holland by the Scottish parliament to treat with Charles II.; and, in 1657, was induced to become one of the 'commissioners for the administration of justice' in Scotland under Cromwell's government. D. was a conscientious, but exceedingly moderate and enlightened, royalist; and though appointed one of the new Scotch judges after the Restoration, he resigned his seat 1663, because he could not take the 'declaration' oath, which denied the right of the nation to take up arms against the king. His great talents, however, induced the monarch to accept his services on his own terms. D. was now created a baronet. In 1671, he became lord pres. of the court of session. In 1681, when the infamous 'test' oath was under consideration, D., with the dexterity of a lawyer, caused John Knox's Confession of Faith to be introduced as a part of the test; but as this confession inculcated resistance to tyranny as a duty, the one-half of the test contradicted the other. D.'s private conscience, however, was more fastidious than his public one, for he refused to take the very oath which, by his ingenuity, he had virtually deprived of its despotic character, and in consequence had to resign all his appointments. Before this, he had published *Institutions of the Law of Scotland*, still the grand text-book of the Scotch lawyer. Dalrymple went to Holland 1682, to escape the persecution to which he was subjected at home; and while

at Leyden, during 1684–87, he published, at Edinburgh, his *Decisions*; and 1686, at Leyden, a philosophic work in Latin, *Physiologia Nova Experimentalis*. He accompanied the Prince of Orange on his expedition to England. When matters were prosperously settled, William re appointed him lord pres. of the court of session, and elevated him to the peerage under the title of Viscount Stair. Viscount S. had nine children, five sons and four daughters.

His eldest son, JOHN D., Earl of Stair (died 1707), held office under James II., and also under William III. While sec. of state for Scotland, he incurred great odium for his share in the barbarous transaction known as the 'Massacre of Glencoe.' He was elevated to the earldom 1703.

Sir JAMES D., second son of Viscount Stair, was author of *Collections concerning Scottish History preceding the Death of David I.* (1705), and grandfather of Sir John D. of Cranstoun, author of *Memoirs of Great Britain and Ireland, from the Dissolution of the last Parliament of Charles II. until the Sea-battle off La Hogue.*

DALRYMPLE, JOHN, second Earl of Stair: 1673, July 20—1747; b. Edinburgh; second son of the first Earl of Stair, and grandson of Viscount Stair. He had the misfortune, while young, to kill his elder brother, by the accidental discharge of a pistol. This unhappy circumstance induced the parents to educate him away from home, under the care of a clergyman in Ayrshire. D. afterward went to Leyden, where he had the reputation of being one of the best scholars in the university. He completed his curriculum at Edinburgh. In 1701, he accepted a commission as lieut.-col. of the Scottish regt. of foot-guards, and gained the highest distinction in Marlborough's campaigns. When the accession of the Tory ministry, 1711, put a stop to the brilliant career of the great duke, D. retired from the army. When George I. succeeded to the throne, D.—who had become Earl of Stair by the death of his father, 1707—was made a lord of the bedchamber, a privy-councilor, and commander in-chief of the forces of Scotland. Next year, he was sent as ambassador to France, in which capacity he showed the highest ability, and was of the greatest service in traversing the schemes for the reinstatement of the Pretender; but as he refused to flatter his countryman, Law—notorious in connection with the fatal Mississippi scheme—who was then of highest influence in France, the government was mean enough to recall him. For 22 years he lived in retirement at Newliston, near Edinburgh, busied chiefly in agriculture. He was the first to plant turnips and cabbages in the open fields. In 1742, he was sent as ambassador to Holland, and in the following year served under George II., at the battle of Dettingen. Later, he was made commander-in-chief of the forces of Great Britain. See *Annals, etc., of the Viscount and Earls of Stair*, by J. M. Graham (1875).

DALTON, *dawl'ton:* town of Furness, Lancashire, England, on a gentle declivity, abt. 3½ m. from the sea. 18 m.

w. n. w from Lancaster. There are iron mines and foundries in the vicinity, and some malting is carried on. Near the town are the ruins of Furness Abbey, founded for monks of the Cistercian order, 1127, by Stephen, Count of Boulogne, afterward king of Eng. Pop. (1891) 13,300.

DALTON: city and cap. of Whitfield co., Ga.; on the Southern and Nashville and the Chattanooga and St. Louis railroads; 100 m. w. of Atlanta. It is a winter and summer health resort; the seat of Dalton Female College; and has canning factories, flour mills, cotton compresses, and foundries and machine shops. During the civil war it was nearly destroyed. Pop (1910) 5,324.

DAL'TON, John: 1766, Sep. 5—1844, July 27; b. Eaglesfield, near Cockermouth, Cumberland, England. He showed his love of mathematical and physical studies while in a boarding-school kept by a relative in Kendal. He wrote several mathematical essays, and, 1788, began a journal of meteorological observations, which he continued through life. In 1793, he was appointed teacher of mathematics and the physical sciences in the New College at Manchester, where he resided during the remainder of his life, though frequently employed, after 1804, in giving lectures on chemistry in several large towns. In 1808–10, he published his *New System of Chemical Philosophy*, 2 parts (Lond.), to which he added a third part 1827. In 1817, he was appointed pres. of the Literary and Philosophical Soc. at Manchester. He was also a member of the Royal Soc., and of the Paris Acad., and, 1833, received a pension of £150, afterward raised to £300. In the same year, D.'s friends and fellow-townsmen collected £2,000, to raise a statue to his honor, executed by Chantrey, and placed at the entrance of the Royal Institution in Manchester. D. was also honored by the univ. of Oxford with the degree D.C.L., and with LL.D. by the univ. of Edinburgh. He died, universally respected, at Manchester. His chief physical researches were on the constitution of mixed gases, on the force of steam, on the elasticity of vapors, and on the expansion of gases by heat. In chemistry, he distinguished himself by his progressive development of the atomic theory (q.v.), as also by his researches on the absorption of gases by water, on carbolic acid, carburetted hydrogen, etc. His treatises are mostly in the *Memoirs of the Literary and Philosophical Soc. of Manchester*, the *Philosophical Transactions*, Nicholson's *Philosophical Journal*, and Thomson's *Annals of Philosophy*. Besides these, we have his *Meteorological Essays and Observations* (Lond. 1793; 2d edit. 1834).

DALTONISM, n. *dăl'tŏn-ĭzm* [after the chemist *Dalton*, who was so affected]: color-blindness: see Color: Color-blindness.

DAM, n. *dăm* [It. *dama;* F. *dame*, a lady—from L. *domĭnă*]: a female parent, now used only for animals.

DAM, v. *dăm* [Icel. *dammr;* Dan. *dam*, a fish-pond: old Sw. *damfn*, a dam: Pol. *tama*, a dam, a dike]: to stop wholly or partially the flow of a stream of water by a mound of earth and stones, by a wall of timber or masonry, or by

any other obstruction. N. a bank or mound of earth and stones; anything to confine wholly or partially a stream of water. DAM'MING, imp. DAMMED, pp. *dămd*. TINKER'S DAM, a little barrier of clay or dough used by tinkers for confining melted metal till it hardens, and after its use proverbially worthless.

DAM, or DAUM, n. *dawm:* an Indian copper coin, the fortieth part of a rupee, rather more than a halfpenny.

DAMA, n. *dā'ma* [L., a fallow-deer, buck or doe]: genus of mammals, family *Cervidæ*. *D. platyceros* is the Fallow-Deer (q.v.), called by many zoologists, *Cervus dama*.

DAMAGE, n. *dăm'ĭj* [F. *dommage*, harm—from OF. *damage*—from L. *damnum*, hurt, loss]: any hurt, loss, or harm to property or person; the value of the mischief done: V. to injure; to hurt or harm; to receive harm; to be injured. DAM'AGING, imp. DAM'AGED, pp. *-ĭjd*. DAMAGES, n. plu. *dăm'ă-jĕz*, money awarded by a court of law on account of loss or injury to property, or injury to person, through the fault of another. DAM'AGEABLE, a. *-ĭj-ă-bl*, that may be injured. WHAT'S THE DAMAGE? how much is to pay? what is the bill of loss?—SYN. of 'damage, n.': detriment; injury; harm; mischief; prejudice; injustice; wrong; loss.

DAM'AGES, in Law: pecuniary recompense claimed on account of suffering an injury through the act of another. The progress of recent legislation has been in the direction of restricting actions for D. to the cases in which the restitution of property or enforcement of a right cannot be otherwise attained.

Where a sum ascertained in amount is due, the action is one not properly for D., but of debt. But where the sum is not ascertained, as where an injury has been done to a man's character or property, the action can in general be only for D., the amount of which the injured party estimates, and which is determined by the judgment of the court, or verdict of a jury, subject to certain fixed rules which the courts have laid down, as the principle according to which the estimation is to be made. See the titles of the special subjects out of which a claim may arise. It is a general rule to restrict the amount of D. to the actual pecuniary loss, wherever it can be ascertained; and a stipulated penalty for breach of agreement will not usually be accepted as determining the sum due for D., unless it shall appear, by the use of the term 'as liquidated damages,' or some equivalent expression, that both the parties had intended to fix conclusively the sum payable in case of default. Other general rules are, that the injury for which D. are claimed must have affected the claimant individually, and not merely as one of the general public, though it is not essential that the injury should have done material hurt to him, as this affects only the amount of damages. And the injury suffered must have been the direct and immediate consequence of the act done; when it is only a secondary or remote result of the act, no D. will be given. And any act sued on must be an actual injustice; it is not

enough that it produces disadvantageous results, if these arise only from doing what the party was justified in doing. D., therefore, may be sued for in respect of a crime involving liability to criminal punishment. In general, D. are only compensatory; though there are cases in which they have a punitive quality.

DAMALIS, n. *dăm'al-ĭs* [Gr., a young cow or heifer]: genus of quadrupeds belonging to the order *Ruminantia*, and intervening between the cow and the sheep. They were formerly classed with the antelopes. The horns are sub-cylindrical, lyrate, and diverge; a small, bald, moist muffle exists between and below the nostrils; the female has two tails. *Damalis lunatus* is the Sassaby or Bastard Harte-beest; *D. senegalensis*, the Korrigum; *D. pygarga*, the Nunni or Bonte-boc; *D. albifrons*, the Bless-boc; and *D. zebra*, the Doria.

DAMAN, *dâ-mân':* outlying portion of the Punjab, runs about 300 m. along the right or w. bank of the Indus, extending back with an average breadth about 60 m., as far as the Sulĭman Mountains. It stretches in n. lat from 28° 40′ to 33° 20′, and in e. long. from 69° 30′ to 71° 20′. In the absence of irrigation, the district in general is little better than a plain of smooth, bare, hard clay—the result of alternate inundation and evaporation. But when duly irrigated, this baked and burned surface becomes very productive, more especially in the strip of land—known as the Derajat—nearest the bordering stream.

DAMAN′: seaport town, province of Guzerat, Hindustan, belonging to the Portuguese. It stands at the mouth of the Daman Gunga, or Daman river, which rises in the Syadree Mountains, as the upper extremity of the w. Ghauts is called by the natives; lat. 20° 11′ n., and long. 73° 42′ e. Common spring-tides give at least three fathoms on the bar, while outside is a roadstead of more than double that depth. The harbor affords good shelter from the s.w. monsoon, and, as the neighborhood is well stocked with suitable timber, the people are largely employed in the building and repairing of ships. The peculiar drawback of the locality is the lack of fresh water. The river, even when swollen by the rains into an inundation, is brackish, and the wells likewise are so in some degree. Endemic fevers are the natural consequence. The place is fortified with a rampart and bastions, and it is described as having been, before the arrival of the whites, 'a town great and strong.' Pop. 6,000.

DAMAN, *dăm'an* (*Hyrax*): name of one or more species of the order *Hyracoidea*, established by Huxley, and containing 13 species. They were long regarded as a link between *Rodentia* and *Pachydermata*. They were always ranked among the former, till Cuvier pointed out their essential agreement, in dentition and anatomical characters, with the latter, and assigned them a place next to the elephant and the rhinoceros, remarking that, 'excepting the horns, they are little else than rhinoceroses in miniature.' He adds that 'they have quite similar molars, but the upper jaw has two stout incisors curved downward, and during youth

two very small canines, the lower jaw four incisors without any canines.' The skull, also, and other bones of the head, resemble those of the pachyderms. The muzzle is short; the ears, short and round. The ribs are more numerous than even in the pachyderms—21 pair, a number exceeded in no quadrupeds except the sloths, whereas no rodent has more than 15 pair. The toes are united by the skin to the very nail, as in the elephant and rhinoceros, and are round and soft, merely protected in front by a broad nail, which does not reach the ground. The legs are short. The tail is a mere tubercle. There are several species of this genus, natives of Africa and of s.w. Asia. The SYRIAN D. (*H. Syriacus*) is now generally believed to be the *shaphan* of the Old Testament, the *cony* (q.v.) of the authorized English version. The D. is common in Syria and Palestine, inhabiting rocky places, and sheltering itself in the holes of the rocks, but not burrowing, for which its feet are not adapted. It is a timid harmless creature, quick and lively in its movements, completely herbivorous, easily domesticated, and, in confinement, readily eating bread, roots, fruits, and herbs. It is about 11 inches long and 10 inches high; brownish-gray above, white beneath, the thick hair interspersed with long scattered bristles. The ASHKOKO (*H. Abyssinicus*) of Abyssinia, described first by Bruce, and supposed by him to be the shaphan, is now believed to be distinct from the Syrian D., though very similar. The KLIPDASSE (*H. capensis*) of s. Africa differs from the shaphan in its darker color and rather larger size, and also in having only three toes on each foot, whereas the Syrian D. has four toes on the fore-feet and three on the hind-feet. It is very common in rocky places in s. Africa, both on the hills and near the sea-shore. Its favorite food consists of aromatic plants, and its flesh, although eatable, is highly flavored. In the places which it frequents, a peculiar substance called *Hyraceum* (q.v.) is found.

DAMAR, *dä-mär':* town of Yemen, Arabia, about 120 m. n.n.w. of Aden. It has about 5,000 houses.

DAMARALAND, *da-mä'rä-land:* inland territory in the west of s. Africa, n. of Namaqualand (q.v.) and s. of Ovampoland proper. But the latter name is often used as including Damaraland; so at the article OVAMPOS (q.v.) AND OVAMPOLAND.

DAMASCENE, n. *dăm'ă-sēn* [from *Damascus* in Syria]: a particular kind of plum, now written *damson*. DAMASK, n. *dăm'ăsk*, figured silk or linen; a red color: V. to form flowers on cloth; to variegate. DAMASK-STITCH, name given to satin-stitch when worked upon a linen foundation. DAM'ASKING, imp. *-ăsk-ĭng*. DAM'ASKED, pp. *-ăskt*. DAM'ASKEEN, v. *-ăs-kēn*, or DAM'ASCENE, v, *-ăs-sēn*, to produce Damascus blades having a many-colored watered appearance; to etch slight ornaments on polished steel wares; to inlay steel or iron with gold and silver. DAM'ASKEE'NING, imp. *-kē'nĭng:* N. the act of beautifying iron or steel by engraving, or by inlaying with gold or silver. DAM'ASKEENED, pp. *-kēnd*. DAM'ASKINS, n. plu. *-ăs-kĭnz*, Damascus blades.

DAM'ASSIN, n. *-ăs-sĭn*, damask cloth interwoven with flowers in gold and silver. DAMASCENE-LACE, an imitation of Honiton lace, and made with lace braid and lace sprigs joined together with corded bars. The difference between it and modern point lace, which it closely resembles, is in the introduction into Damascene of real Honiton sprigs, and the absence of any needle-work fillings.

DAMASCENUS, *dam-as-sē'nŭs*, JOANNES: abt. 700—abt. 756; b. Damascus: author of the standard text-book of Dogmatic Theology in the Greek Church. On account of his eloquence, he was surnamed *Chrysorrhoas* ('Golden Stream'). In 730, he became a monk in the convent of St. Saba at Jerusalem, where he spent the rest of his days in the composition of theological works. He had the honor of being canonized by both the Latin and Greek churches. D. was a man of extensive erudition, and was considered the ablest philosopher of his time; but the word 'philosopher' must have meant something very different in those days from what it does now, as D.'s writings are characterized by weakness of judgment and want of critical power. The best edition is that of Le Quien (2 vols. Paris 1712).

DAMASCUS, *da-măs'kŭs* (Arabic *Dimishkesh-Shâm*): city of Syria, largest in Asiatic Turkey, in a situation of unrivalled beauty on a luxuriant plain at the e. base of the Anti-Libanus, 53 m. e.s.e. of Beyrout, which forms its port; lat. 33° 27′ n., long. 36° 23′ e. The appearance of the city from a distance is beautiful in the highest degree. The bright buildings, sparkling beneath a Syrian sun, rise out of a sea of various tinted foliage, while all around—save on the n.w., where stretches the long bare snow-white ridge of the Anti-Lebanon—extend charming gardens, rich wheat-fields, and blooming orchards, with the river Barrada (the Abana of Scripture) and its branches winding through until they lose themselves far to the e. in the Lake Bahr-el-Merj, into which the Phege (the Pharpar of Scripture), a smaller stream, also flows. As in the case of all eastern cities, the expectations excited by a distant view of D. are by no means realized on a close inspection. The city proper is about 6 m. in circumference, partly surrounded by old dilipadated walls, portions of which date from early Roman times, while other parts are of Saracenic architecture, and some mere mud-patches of the present day. The streets generally are dirty and decayed, and so very narrow that a loaded donkey almost entirely blocks the passage. The best street is 'Straight Street,' mentioned in the Acts of the Apostles in connection with the apostle Paul. The houses for the most part are very mean-looking structures, often presenting to the street nothing but a dead-wall with a doorway in it, while the best have rough mud-walls, with a projecting upper story extending so far over the narrow street that hands may be shaken from opposite windows. But as the interior of the city presents a sad contrast to its charming surroundings, so do the rich interiors of the houses contrast with their miserable externals. Fine marble-paved courts ornamented with trees,

shrubs, and fountains, rooms with arabesqued roofs and walls, most luxuriously furnished, are common features of all the dwellings of the wealthier classes. The principal buildings of D. are places of worship, chief of which is the Great Mosque—formerly a heathen temple, then a Christian church—composed of different kinds of architecture, and occupying a quadrangle 163 yards by 108 yards, the interior dimensions being 431 ft. by 125. The floor is of marble tessellated, and covered with Persian carpets, and the walls and piers of the transept are enriched with beautiful devices formed of various colored marbles, while rows of noble Corinthian pillars divide the interior into nave and aisles. Altogether, this is one of the handsomest ecclesiastical buildings of which Mohammedans can boast. The citadel is large and imposing, but not strong; and the Great Khan is a splendid building, of black and white marble. There are many interesting remains of antiquity in D., but they are lost amid the mean modern structures and the bazaars. The latter are numerous, and finer than those of Cairo or Constantinople, and very well supplied with goods of oriental manufacture; each class of goods having a bazaar for itself. The manufactures of D. used to be important, consisting of silks, cottons, coarse woolen cloth, jewelry, saddlery, and arms; but the productions now are little more than sufficient for local consumption. Before 1860 the looms were reckoned at 3,000, while now they are said to reach barely 1,300. The manufactures of the famous Damascene blades have long ceased. This decline is caused chiefly by the taxation upon raw products. The trade with Bagdad was large; but in 1857 the caravan was plundered on its way across the desert, the loss to the merchants of D. being estimated at $200,000. This paralyzed the commerce. The annual caravan to Mecca from D. at one time consisted of some 50,000 or 60,000 persons, most of whom engaged to some extent in trade; but the facilities which in recent years have been afforded for making the pilgrimage by way of Egypt and the Red Sea has caused considerable diminution in the pilgrims, and consequently in the trade. One of the greatest blows at the prosperity of D. was struck in 1860, when the Druses (q.v.) entered the city and destroyed about 6,000 houses in the Christian quarter, killing from 3,000 to 5,000 persons, and selling many of the women into Turkish harems. The imports of British goods, chiefly plain and printed calicoes, cotton handkerchiefs, and cotton yarn, have been valued at £150,000. In 1870 the value of the goods brought into D. by the great (Bagdad) caravan was £90,000.

D. is perhaps the most ancient city in the world. Josephus attributes its foundation to Uz, great-grandson of Noah; but whether it dates so far back or not, it is certain that it was a place of consequence in the days of Abraham. During the time of the Hebrew monarchy, it was the capital of Syria. It afterward passed successively under the rule of the Assyrians, Persians, Macedonians, Romans, and Saracens; and finally, 1516, it was captured by the Turks under Sultan Selim I.—in whose hands, with the

exception of a short interval (1832–40), when it belonged to the pasha of Egypt, it has since remained. Under every change of dynasty and every form of government, D., unlike most cities, has retained its prosperity. Pop., including the adjoining village of Salahîyeh, 225,000; 130,000 are Mohammedans, 15,000 Christians, and 5,000 Jews.

The vilayet of Damascus comprises all the territory between the Lebanon and the Euphrates—that is, all between lat. 31°–36° n., and long. 35°–41° e. The surface is mostly level and very fertile, and produces grain of various kinds, hemp, flax, silk, cotton, madder, tobacco, and cochineal. The vilayet of D.—or of Syria, as it is also called—is accounted the most important vilayet of Turkey Pop. 518,750.

DAMAS'CUS BLADE: see Damaskeening.

DAM'ASK: any textile fabric in which figures of flowers, fruits, or others not of geometrical regularity, are woven. The word is supposed to be derived from the city of Damascus having been an early seat of these manufactures. From the intricacy of the early process, the art of D. weaving was long a mystery confined to a few localities; but since the introduction of the Jacquard machine, it is extensively employed wherever ornament is wanted in the stuffs used for dress or house-furnishings. The rich satins and brocades of Lyon and Spitalfields, the flowered ribbons of Coventry, and the bed and window curtains of Halifax and Bradford, are all examples of D. manufacture; but it is in the department of table-linen that the art has had its widest scope and greatest triumphs. The principal seats of the manufacture, on the continent of Europe, are at Courtrai and Liege in Belgium, and in some parts of Saxony, Silesia, and Austria; in England, to a considerable extent at Barnsley, in Yorkshire; in Ireland, at Belfast, Lisburne, and Ardoyne; and in Scotland, at Dunfermline, which may be called the metropolis of the manufacture.

There are three descriptions of D. known in the trade—viz., 1. Full Harness, which is generally employed in patterns of limited size and minute detail, the peculiarity being that the Jacquard machine lifts only one thread by each needle, and in such cases the pattern is repeated to fill up the breadth wanted. 2. 'Single' or 'Common' D., in which any number of threads, from two to seven, can be lifted by one needle, to form the pattern; while the ground is produced by a set of five shafts and heddles, giving from twice to seven times the extent of pattern obtained from the same machine by the full-harness process. In full-harness and single D. goods, a square fabric is considered the proper medium, that is, the warp and weft equal; but sometimes a thread or two less or more on warp or weft is used, according to the effect to be produced. 3. In Double D., the pattern is produced in the same way as in single, and the ground formed by eight shafts and heddles, forming what the weavers call an eight-leaved twill, absorbing one-half more weft than warp, and

giving that fine satin-like ground which distinguishes double damask. Besides these descriptions of D., a mixed cotton and woolen colored fabric in table-covers has been introduced, and is now manufactured extensively, the ground of which is woven with twelve shafts.

It is quite usual for the mere designing and painting of a pattern to cost $250; and $350 has been paid for some extensive designs; while the famous 'Crimean Hero' pattern, containing portraits of the Queen, Prince Consort, Emperor Napoleon, etc., cost $3,000 of outlay, ere a yard of cloth could be brought to market, employing seven Jacquard machines, consuming 50,000 cards, and containing 4,800 threads in the sq. yard. In 1836, there were in Dunfermline 3,000 D. and 517 diaper looms, and the capital embarked in the trade was estimated at £826,261, and the total number of persons employed, 5,044. Steam-power was successfully introduced in 1849, when one factory employed about 100 power-looms. In 1877, there were 11 power-loom factories, with 4,000 looms, two-thirds employed in the weaving of damask. When it is considered that the production of one power-loom is equal to that of four hand-looms, some idea may be formed of the development of the trade since 1836.—A good description of D. and the D. loom is in Chalmers's *History of Dunfermline* I. II.

DAMASKEENING, *dăm-ăs-kē'nĭng*, or DAMASCENING, *-sē'nĭng:* art of producing upon ordinary steel certain ornamental appearances resembling those observed on the famous Damascus blades. Attention was drawn to this branch of industry first by the Crusaders, who brought from Damascus to Europe many articles made of superior steel, such as sword-blades and daggers. These were found to possess not only great elasticity, united with considerable hardness, but their surfaces were covered with beautiful designs, formed by a tissue of dark lines on a light ground, or light lines upon a dark ground, and occasionally by the inlaying of gold on the steel-blue ground. These Damascus blades appear to have been constructed of steel and iron welded together; and the elegant designs were brought out by immersing the blades in dilute acids, which, eating away unequally the surface, gave rise to the mottled appearance. In genuine Damascus blades, the designs run through the substance of the blade, and the *watering*, or regular, almost symmetrical figuring, is not worn off by friction or even grinding. Imitations of the watering of Damascus steel are produced on common steel by etching with acids; and in this way landscapes, inscriptions, and ornaments, and decorations in general, are imprinted on the steel-blue ground. Gold and silver also are inlaid in the higher class of sword-blades and other articles. Gun-barrels are occasionally subjected to the process of Damaskeening. Attempts have been made in France to accomplish damaskeening by means of photography, but as yet with imperfect results.

DAMASONIUM, n. *dăm-a sō'nĭ-ŭm* [mod. L.—from class L. *damasonion;* Gr. *damasōnion*, the plant described in the definition]: genus of *Alismaceæ*, formed for the re-

ception of the star-fruit, of which the more common scientific name is *Actinocarpus Damasonium.*

DAMASUS, *dam'a-sus,* SAINT: Bishop of Rome: a Spaniard, born probably early in the 4th c.; d. 384. In 366, he was elected Bp. of Rome, but had to struggle fiercely for the possession of his office with one Ursinus, who was supported by a considerable party. His career throughout was far from peaceful. He was busied mainly in subduing the still numerous Arians in the west; in combating the heresy of Apollinaris, which he caused to be condemned by the council assembled at Constantinople 382; and in defending the cause of Paulinus against Meletius. It is difficult to form a just estimate of D.'s character. His enemies used to call him *Auriscalpius Matronarum* ('The ear-tickler of the married ladies'), and hinted that he was in the habit of inducing rich female penitents to make testamentary bequests in his favor—a conspicuous vice of the clergy at that time; so much so, indeed, that Valentinian was obliged to issue an edict forbidding ecclesiastics to receive such bequests for the future. The edict was addressed to D., who was required to announce it to the church. On the other hand, he was a great friend of St. Jerome, and was primarily instrumental in inducing that learned divine to undertake a new translation of the Bible. His extant works consist of seven epistles, addressed to various bishops, and rather more than 40 short poems, religious, descriptive, etc., but of little or no merit. The first edition was published at Rome by Sarrazanius, 1638. D.'s festival is on Dec. 11.

DAMBOOL, *dâm-bôl':* vast rock-temple of the Buddhists in Ceylon, containing, among a profusion of carvings, figures of Buddha of extraordinary magnitude. There are also important inscriptions. The village of D. is 40 m. n. of Kandy. See *Ceylon,* by Sir J. Emerson Tennent (Lond. 1859), II, 577.

DAME, n. *dām* [It. *dama;* F. *dame,* a lady—from L. *domĭnă,* a lady]: title of honor which in England long distinguished high-born ladies from the wives of citizens, and of the commonalty in general. In the age of chivalry, it was customary even for a queen to be so called by her chosen knight ('the dame of his heart, of his thoughts,' etc.). In consequence of the greater courtesy shown toward women of higher rank arose the custom of prefixing the word *ma* to *dame,* as a special proof of veneration and homage. Hence, too, the Virgin-mother was called in France *Notre Dame* ('*Our* Mistress,' or Lady, as if no one Christian could exclusively claim the privilege of serving her with the homage of his heart). The daughters of the king of France, as soon as they came into the world, were called *Madame;* and this was also the sole title of the wife of the king's eldest brother. In England, the word D., though not much used, is now applied to married women of all classes. In the United States it is seldom heard. *Madame* is shortened into Madam, which is still a word of honor, applicable, in particular cases, to majesty itself.

Thus, Alfred Tennyson, in dedicating his poems to Queen Victoria, speaks as a chivalrous troubadour might have done—

'Take, *Madam*, this poor book of song.'

DAME-SCHOOL; an elementary school taught by a female who is not a professional or certificated teacher.

DAME'S VI'OLET (*Hesperis*): genus of plants of the nat. ord. *Cruciferæ*, having four sided or two-edged pods, and containing several species, annual and biennial herbaceous plants, natives, chiefly, of the middle and south of Europe. One, the COMMON D. V., or WHITE ROCKET (*H. matronalis*), is found in Britain, in hilly pastures, but perhaps rather escaped from cultivation than a true native. It has an erect branchedstem, with ovato-lanceolate leaves, and terminated by numerous large lilac flowers, scentless by day, but very fragrant at night, on which account this plant is cultivated in flower-pots by German ladies. The custom appears to have been an old English one also, and to have given the plant its common name. The NIGHT-SCENTED ROCKET (*H. tristis*) is also a favorite flower in Germany.

Dame's Violet:
a, a flower divested of calyx and corolla; *b*, a petal; *c*, calyx.

DAMIANISTS, *dā'mĭ-an-ĭsts*, or ANGELISTS: sect who followed Damianus (d. 601), Patriarch of Alexandria He held monophysite views, and his doctrine of the Trinity was essentially Sabellian. The D. were called by their opponents Tetradites, as having four gods—the Father, the Son, the Spirit, and the Divine Being in which the three former were united.

DAMIENS, *dâ-me-ăng'* or *dā'mĭ-énz'*, ROBERT FRANÇOIS: 1714–57; b Ticulloy, village near Arras, France: known for his attempt to assassinate Louis XV. He was evil-disposed from his youth, known even then as *Robert le Diable*. On account of a robbery which he had committed, he fled into Belgium 1756, whence he returned to Paris about the end of the year. The motives of his attempt at assassination are not well understood. He alleged that it was the conduct of the king toward the parliament; the popular, but apparently groundless, opinion was that he was instigated by the Jesuits. 1757, Jan. 5, having gone to Versailles on the previous day, he assiduously followed the king and his courtiers about everywhere; and about six o'clock at night, when the king was entering his carriage to leave Trianon, he stabbed him. The king recognized his assassin, and D. was seized. The punishment inflicted on him was horrible. The hand by which he attempted the murder was burned at a slow fire; the fleshy parts of

his body were then torn off by pincers; and, finally, he was dragged about for an hour by four strong horses, while into his numerous wounds were poured molten lead, resin, oil, and boiling wax. Toward night the wretch expired, having kept his resolution of not confessing who were his accomplices—if, indeed, he had any. His remains were immediately burned, his house was destroyed, his father, wife, and daughter were banished from France forever, and his brothers and sisters compelled to change their names.

DAMIETTA, *dăm-ė-ĕt'ta:* town of Lower Egypt, on the right bank of the chief of the Nile's branches, about 8 m. from its mouth in the Mediterranean; lat. 31° 25′ n., long. 31° 49′ e. It is in general ill and irregularly built, but has some handsome mosques and marble baths, and several bazaars. Its commerce has been much injured by the prosperity of Alexandria. It still has considerable trade in exporting rice, which grows abundantly in the neighborhood, fish (from Lake Menzaleh), coffee, and dates; and imports charcoal, soap, and manufactured goods. Damietta (native *Damiat*) is connected by railway with Cairo, etc. The cloth known as *dimity* received its name from Damietta, where first it was manufactured. A bar at the mouth of the river prevents vessels of more than 50 or 60 tons from ascending to Damietta. The existing town was erected about 1251, but, prior to that, a city of the same name (more anciently Tamiáthis) stood about 4 m. to the south. It was strongly fortified by the Saracens, and formed on that side the bulwark of Egypt against the early Crusaders, who, however, succeeded in capturing it more than once. It was razed, and rebuilt farther inland on the present site, by the sultan Baybers. Pop. 37,100.

DAMMAR, oleo-resinous substance obtained from certain trees of the genus *Agathis* (formerly *Dammara*), nat. ord. *Coniferæ*. The more important species are *A. dammara* and *A. australis*, they are natives of Molucca and the East India Islands, also of the Philippines and New Zealand. The genus is distinguished from other *Coniferæ* by broad lanceolate leathery leaves, which have numerous nearly parallel veins, and by their seeds being winged, not at the end, but on one side. The Moluccan Dammar grows to a great height; the timber is light and of an inferior quality, and the tree is valuable chiefly for its resin. This resin often flows spontaneously from the tree, and can be obtained in large pieces by incision, especially in the protuberances of the stem. It hardens in a few days and is then yellowish, transparent when in small pieces, smooth and brittle, breaking with a clean, glassy fracture, and is readily reduced to powder. It is intermediate in hardness between colophonium and copal. Chemically it contains traces of ethereal oil, dammarolic acid, and two distinct resins, one soluble in alcohol the other not. It is readily soluble in oil of turpentine; quickly becomes viscid when heated; when sprinkled on burning coal, diffuses an odor like that of rosin or mastich;

readily takes fire, and burns with much smoke and a somewhat acid smell. It is used in Asia for domestic purposes, and in the arts like other resins; it is an article of commerce, and is used in various ways to form varnishes, which dry quickly, have a very bright lustre, and, being colorless, allow the beauty of the colors over which they are spread to be perfectly seen; but readily become viscid again, and are not permanent, so that this resin cannot be made a substitute for copal and amber.—To this genus belongs also the KAURI PINE (q.v.) of New Zealand (*A. australis*), which produces the resin known as *Kauri Resin*, or *Kauri Gum*.—The word *Dammar*, *Dammer*, or *Damar*, signifies *resin* in some of the languages of India. The resin known as BLACK DAMMAR is obtained in the Molucca Islands from the trunk of *Marignia acutifolia*, a tree of the nat. ord. *Amyridaceæ*. It is a semi-fluid soft resin, with a strong smell, becoming black when it dries: it is used as pitch, also to yield a kind of turpentine obtained by distillation. —*Canarium microcarpum*, tree of the same order, also native of the furthest east, yields, by incision of the trunk, a viscid, odorous, yellowish substance very similar to Balsam of Copaiva, which is called *Damar* or *Dammar*, and is used in naval yards as oakum, being mixed with a little chalk and the bark of reeds, and becomes as hard as a stone.—Quite distinct from all these is the resin also called *Dammar* or *Piney Dammar* in India, often also called Copal (q.v.) in India, and *Anime* (q.v.) in Britain, the produce of *Vateria Indica*, a large tree of the nat. ord. *Dipteraceæ*. It is obtained by wounding the tree, and when fresh is clear, fragrant, and acridly bitter; when dried it becomes yellow, brittle, and glass-like. It is used in India as a varnish (*Piney Varnish*), hard, tenacious, and much esteemed. It is also made into candles in Malabar, which, in burning, give an agreeable fragrance, and a clear light with little smoke. *Shorea robusta*, the Sal (q.v.), so much valued in India as a timber-tree, also of the nat. ord. *Dipteraceæ*, and some other species of *Shorea*, yield a resin also known as *Dammar*, and as *Ral* and *Dhoona*, much used in dock-yards in India as pitch.

DAMMUDAH, *dăm-mô′dâ*, or DUMMO′DAH: river of India, rises in Ramgurh, a district in the presidency of Bengal, about lat. 23° 55′ n., and long. 84° 53′ e. After a generally s.e. course of 350 m., it enters the Hoogly from the right, in lat. 22° 13′ n., and long. 88° 7′ e. The valley of the Dammudah—traversed by the main railway between Calcutta and the n.w. (the E. Indian railway)—abounds in coal and iron; and competent judges have calculated that bar iron may here be manufactured 20 per cent cheaper than it can be imported from Great Britain.

DAMN, v. *dăm* [F. *damner*, to condemn—from L. *damnārĕ*, to condemn—from *damnum*, loss, harm]: to sentence to misery in the future world; to condemn; to condemn as bad or displeasing, as a play by hissing. DAMN′-ING, imp. *-ĭng*. DAMNED, pp. *dămd:* ADJ. sentenced to future punishment; condemned; hateful. DAM′NABLE, a. *-nă-bl,*

[F.—L.]: deserving damnation, or leading to it; odious. DAM'NABLY, ad. *-blĭ.* DAM'NABLENESS, n. *-nă-bl-nĕs,* the state or quality of deserving damnation. DAMNA'TION, n. *-nā'shŭn* [F.—L.]: condemnation; sentence to everlasting punishment. DAM'NATORY, a. *-nă-tir-ĭ* tending to condemn; containing a sentence of condemnation. DAMNIF'IC a. *-nĭf'ĭk* [L. *fiō,* I become]: causing loss; injurious DAM'NIFY, v. *-nĭ-fī,* to inflict damage on any one; to injure; to impair.

DAMOCLES, *dăm'ō-klēz:* one of the courtiers and sycophants of the elder Dionysius, the tyrant of Syracuse. It is recorded by Cicero that Damocles, having lauded in the highest terms the grandeur and happiness of royalty, was reproved by Dionysius in a singular manner. The sycophant was seated at a table, richly spread and surrounded by all the furniture of royalty, but in the midst of his luxurious banquet, looking upward, he saw a keen-edged sword suspended over his head by a single horse hair, emblem of the constant danger that attends the possession of power. DAMOCLES' SWORD, a dreaded and ever-present danger.

DAMONICO, n. *da-mŏn'ĭ-ko* [It.]: compound of terra di Sienna and Roman ochre, burnt and having all their qualities; it is rather more russet in hue than the orange de Mars, has considerable transparency, and is rich and durable in color.

DAMON, *dā'mon,* AND PYTHIAS, *pĭth'ĭ-as* (or PHINTIAS, *fĭn'tĭ-as*): two noble Pythagoreans of Syracuse, models of faithful friendship. Pythias having been condemned to death by Dionysius the tyrant of Syracuse, begged to be allowed to go home, for the purpose of arranging his affairs, Damon pledging his own life for the reappearance of his friend. Dionysius consented, and Pythias returned just in time to save Damon from death. Struck by so noble an example of mutual affection, the tyrant pardoned Pythias, and desired to be admitted into their sacred fellowship.

DAMP, a. *dămp* [Ger. *dampf,* short wind, vapor steam; *dämpfen,* to suffocate: Dut. *dempen;* Sw. *dampa,* to extinguish a light, to repress—*lit,* close and confined, as causing humidity]: in a state between dry and wet; moist, humid; N. moist air; moisture; fog; vapor; depression of spirits; dejection: V. to moisten; to make slightly wet; to depress or discourage; to weaken; to check or restrain. DAMP'ING, imp. DAMPED, pp. *dămpt.* DAM'PER, n. that which damps or checks; a movable iron plate acting as a door or valve, rising, falling, sliding, or turning in a flue or chimney to reduce its size at pleasure, and thus by checking the flow of air to 'damp' or reduce the combustion: in *Australia,* etc., a simple kind of scone or unleavened bread, of wheat flour; in a *locomotive engine,* a kind of iron valve fixed to the smoke-box end of the boiler, which is shut down when the engine is standing, and opened when it is running; an apparatus (1) for checking the vibrations of a

magnetic needle, (2) for moderating the vibrations of the wires of a pianoforte after a key is struck, and the finger is lifted from the key, immediately stopping the vibration of the string. It consists of a second hammer, which, on the rising of the key, strikes the string and remains upon it, instead of bounding off as the sounding-hammer does. Perfect damping, always desirable, is not always obtained, especially in upright pianofortes of the older make. In respect of damping, the pianofortes of the German makers are superior to the English. The more perfect the damping is, the more distinctly and clearly the passages and harmony are heard, while the instrument gains in purity of tone, when there is none of that confusion of sounds which arises from imperfect damping. DAMPS, n. plu. noxious vapors issuing from the earth, as from old wells or pits. DAMP'NESS, n. moisture; humidity. CHOKE-DAMP, *chōk-*, the carbonic-acid gas, fatal to animal life, which is generated in close and confined places, as coal-pits, cellars, wells, etc. FIRE-DAMP, the inflammable gas generated in coal-pits; marsh-gas or light carburetted hydrogen. DAMP'EN, v. *-ĕn*, to make damp or moist. DAMPENING, imp. *dămp'-nĭng*. DAMP'ENED, pp. *-ĕnd*. DAMP'ENED, pp. *-ĕnd*. DAMP'ISH, a. *-ĭsh*, moderately damp or moist. DAMP'-ISHLY, ad. *-lĭ*. DAMP'ISHNESS, n. a moderate degree of damp; slight moisture.

DAMPIER, *dăm'pēr*, WILLIAM: b. 1652, of a Somersetshire family: English navigator. He early went to sea, and with a party of buccaneers Dampier crossed the Isthmus of Darien 1679, and embarking on the Pacific in canoes and similar small craft, captured several Spanish vessels, in which they cruised along the coast of Spanish America, waging war with the Spanish subjects. In 1684, Dampier engaged in another buccaneering expedition, in which he coasted along the shores of Chili, Peru, and Mexico, sailing thence to the E. Indies, touching at Australia, and after some time returning to England, where, 1691, he published an interesting account of the expedition, entitled *A Voyage Round the World*. He was afterward deputed by govt. to conduct a voyage of discovery to the South Seas, in which he explored the w. and n.w. coasts of Australia, also the coast of New Guinea, New Britain, and New Ireland, giving his name to the Dampier Archipelago and Strait (q.v.). The events of the latter part of Dampier's life are not well known. Beside one above mentioned, the following are his principal works: *Voyages to the Bay of Campeachy* (Lond. 1729); *A Treatise on Winds and Tides;* and a *Vindication of his Voyage to the South Sea in the Ship St. George* (1707).

DAMPIER ARCHIPELAGO, AND STRAIT: named from the famous navigator and buccaneer William Dampier (q.v.).

The *Archipelago* is off the n.w. coast of Australia, about lat. 21° s., and long, 117° e. The principal islands of the cluster are Enderby, Lewis, Rosemary, Legendre, and Depuch.

The *Strait*, 35 m. wide, separates the island of Waygiou from the n.w. extremity of Papua or New Guinea, lying almost immediately under the equator, and about long. 131° e.; thus, as nearly as possible, the antipodes of the mouth of the Amazon.

DAMP'ING OFF, in Horticulture: death of plants from excess of moisture in the soil and atmosphere. Young seedlings in stove-houses and hotbeds are particularly liable to it. Although the cause is obvious, prevention is not always easy; not only because some plants are very sensitive as to moisture, but also because the necessity of keeping sashes closed on account of temperature often stands in the way of desirable ventilation, and it is when a moist atmosphere stagnates around plants, and the temperature is not very low, that they are most liable to damp off.

DAMROSCH, *dâm'rŏsh*, Frank, American musician: b. Breslau, Prussia, 1859, June 22. He was trained by his father, Leopold (q.v.), and in 1882 became conductor of the Denver Chorus Club and supervisor of music in the public schools of that city. He was chorus master at the Metropolitan Opera House, New York, from 1885 to 1891, and in 1892 organized the People's Singing Class. Since 1897 he has been supervisor of music in the public schools of New York.

DAMROSCH, Leopold, m.d.: 1832, Oct. 22—1885, Feb. 15; b. Posen, Prussia: musician. He took his degree in medicine at the Univ. of Berlin 1854, but applied himself to the study of music and attained wide popularity as a violinist. Liszt appointed him sole violinist in the ducal orchestra at Weimar, 1856, and he became leader of the Philharmonic Soc. of Breslau 1858. He conducted its concerts with success three years, then founded a symphonic soc. of 80 instrumentalists with which he remained till 1871, when he removed to New York and assumed the directorship of the Arion singing soc., with which he made his first American appearance, 1871, May 6. In 1873, he founded the New York Oratorio Soc., which produced the chief works of Bach, Beethoven, Brahm, Handel, Haydn, Mendelssohn, and Mozart under his direction, and with full orchestral accompaniment; 1878, organized the New York Symphony Soc.; 1881, May 3-7, gave a memorable musical festival with the aid of both societies; and 1884, became director of the new Metropolitan Opera-house. He composed a number of violin concertos, 12 books of song, and the *Fest Overture*, *Ruth and Naomi*.

DAMROSCH, Walter Johannes, American musician: b. Breslau, Prussia, 1862, Jan. 30. He is a son of Leopold Damrosch (q.v.), and has been a citizen of the United States since 1871. He inherited the musical talent of his father, and succeeded him in his enterprises. He is the special exponent of the Wagnerian school of music, and has conducted operatic performances in all the large cities, proving himself a most acceptable leader. He has

also written an opera founded on Hawthorne's tale of *The Scarlet Letter*, besides other excellent music.

DAMSEL, n. *dăm'zĕl* [F. *demoiselle*, a young lady—from OF. *damoiselle*, fem. of OF. *damoisel*, a young man: It. *damigella*, dim. of *dama*, a lady—from L. *domĭnă*, a lady]: a young unmarried woman; a maiden; a girl.

DAMSON, n. *dăm'zn* [from *damascene*, the *Damascus* plum]: rather small oval-fruited variety of the common plum, much esteemed for preserving, and not wholly unfit for dessert. The tree grows to considerable height, but has a bushy, sloe-like appearance. It is extremely fruitful. There are many sub-varieties, with fruit of different colors, dark purple, bluish, black, yellow, etc. The MOUNTAIN DAMSON or BITTER DAMSON of the West Indies is the Simaruba (q.v.).

DAMUGGOO, *dâ-mŭg-gô':* large and populous town of Upper Guinea, Africa, on the left bank of the Niger; lat. 7° n., long. 7° 50′ e. The houses, built of mud, and supported by wooden props, are circular in shape. The town is dirty, and has a miserable appearance. The population, of number not known, support themselves by trade and cultivation of the soil.

DAN, n. *dăn* [Sp. *don;* F. *dom*, sir, lord—from L. *domĭnus*, lord: Icel. *dan*, lord: Gael. *duine*, a man]: in *OE.*, applied as a title of honor to men; sir; master; latterly applied in a jocular way.

DAN: city in the n. of Palestine, e. of the springs of Jordan, s. of Mount Lebanon; built by the Canaanites and originally called Laish of Leshem. After the close of Joshua's wars the city had a period of quietness and prosperity till a tribe of Danites who lived about 140 m. to the s.w., assaulted and captured the city, set up a stolen graven image, and named the city after their ancestor. It was near Dan that Abraham gained his victory over Chedorlaomer and the allies, and within the city that Jeroboam publicly established idolatry by erecting a golden calf. Nebuchadnezzar marched his troops through or past it when on his way to invade Judea, and it was laid waste by Benhadad, King of Syria. The familiar expression, 'from Dan to Beersheba,' was used to denote the whole extent of the country, as Dan was the most northern outpost and Beersheba the most southern city; in modern usage it means from one end of land to the other.

DAN: fifth son of Jacob and eldest son of Bilhah, Rachel's maid. He was credited with having but one son, Hushim, or Shuam, yet when the tribe came out of Egypt and were numbered near Sinai, the tribe of Dan under command of Ahiezar amounted to 62,700 able-bodied men, and was the largest except that of Judah. While in the wilderness the tribe increased to 64.400 men. With the tribes of Asher and Naphtali, it formed the fourth division of the Hebrew camp. It was the last to receive the inheritance of land, and was given the smallest of the

twelve portions, a tract n.w. of Judah, near the Mediterranean. The Amorites disputed this possession and occupied a large portion of it till the neighboring tribe of Ephraim aided the Danites to subdue them.

DANA, *dā'na*, CHARLES ANDERSON: editor: 1819, Aug. 8—1897, Oct. 17; b. Hinsdale, N. H., descendant of Richard Dana (d. Cambridge, Mass., 1695), who was progenitor of all of the name Dana in the United States, and was (as is believed) son of a French Huguenot who settled in England 1629. The early part of his life was passed in Buffalo, N. Y., where he served as a clerk in a store, at the same time preparing for college. He was two years at Harvard, but left without graduating on account of serious trouble with his eyes. He was associated with George Ripley, George William Curtis, Channing, Dwight, Margaret Fuller, and others in the Brook Farm communistic experiment, and edited the *Harbinger*, which was a reform publication. Dana became a member of the editorial staff of the N. Y. *Tribune* 1847, of which he became a stockholder and managing editor 1862. He disagreed with Mr. Greeley at the beginning of the war regarding the management of the paper, and resigned his position, being at once employed by Edwin M. Stanton in the war dept., and appointed asst. sec. of war 1863, a position which he held till the close of the war. He had editorial charge of the Chicago *Republican* for a short time, but returned to New York 1867 and organized the *Sun* publishing company, owning a majority of the stock and continuing editor-in-chief of the paper from that time. Besides his connection with daily journalism, Dana has performed important work more directly literary. In particular he planned Appleton's *New American Cyclopædia*, and edited it 1853–63 in association with George Ripley, LL.D., editing also its revision 1873–76. He wrote a *Life of Ulysses S. Grant* (1868) in association with Gen. James H. Wilson, and edited the *Household Book of Poetry* (1857), which has passed through many editions.

DANA, EDWARD SALISBURY, American mineralogist: b. New Haven, Conn., 1849, Nov. 16. He was graduated from Yale in 1870 and has been a member of the faculty at that institution from 1874,, at present as professor of physics. He has published: *A Text Book of Mineralogy* (1877); *Text Book of Mechanics* (1881), *Minerals, and How to Study Them; Sixth Edition of James D. Dana's System of Mineralogy* (1892).

DANA, *dā'na*, FRANCIS, LL.D.: jurist: 1743, June 13—1811, Apr. 25; b. Charlestown, Mass.: son of Judge Richard Dana. He graduated at Harvard 1762, was admitted to the bar 1767; joined the Sons of Liberty; was a delegate in the first provincial congress of Mass. 1774; bearer of confidential dispatches to his brother Edmund in London 1775; member of executive council of Mass. 1776–80; delegate to the continental congress which formed the confederation 1777, and to the congress 1778, in which he was chairman of the committee on the reorganization of the

army; appointed sec. to John Adams (commissioner to negotiate peace with Great Britain) 1779; minister to Russia 1780–82. He returned home 1783, was appointed a judge of the Mass. supreme court 1785, elected delegate to the Annapolis convention 1786, the convention that adopted the federal constitution 1787, and the state convention that ratified it 1788; appointed chief justice of Mass. 1791, Nov. 29, and served till 1806. He was a federalist in politics, a founder of the American Acad. of Arts and Sciences, and father of Richard Henry Dana, the poet.

DANA, James Dwight, ph.d., ll.d.: mineralogist: 1813, Feb. 12—1895, Apr. 14; b. Utica, N. Y. He graduated at Yale 1833; thereafter for two years was mathematical instructor of midshipmen in the U. S. navy afloat; asst. in chemistry to Prof. Silliman at Yale 1836–38; sailed with the Wilkes U. S. exploring expedition as mineralogist and geologist 1838, and served with the expedition till its return 1840; then was engaged 13 years in studying the mineralogical, geological, and zoological material brought home from the Southern and Pacific oceans, the results appearing in three 4to vols., with maps —viz., *Report on Zoophytes* (1846), *Report on the Geology of the Pacific.* etc. (1849), and *Report on Crustacea* (1852–54) all pub. by govt. He became Silliman prof. of nat. hist. at Yale 1855, and continued to hold the same chair, though its style has, since 1864, been 'chair of geology and mineralogy.' After 1850 Dr. Dana was one of the editors of the *American Journal of Science and Arts.* His services to natural science have been recognized by foreign learned academies and societies, by their electing him to their membership or awarding him medals of honor. Apart from contributions to periodical publications and to the proceedings of scientific societies, his published works are (besides the 3 vols. issued by the U. S. govt.): *A System of Mineralogy* (1837, 5th ,ed. 1868); *Manual of Mineralogy* (1848, 4th ed. 1853); *Coral Reefs and Islands* (1853); *Manual of Geology* (1863, 3d ed. 1880); *Text-book of Geology* (1864, 4th, ed. 1883); *The Geological Story Briefly Told* (1875).

DANA, John Cotton, American librarian: b. Woodstock, Vt., 1856, Aug. 19. He was graduated at Darmouth College 1878, and admitted to New York bar 1882. He was librarian of the Public Library, Denver, Col., 1889–97; of the City Library Association of Springfield, Mass., 1898–1901, and has since been at the head of the Public Library of Newark, N. J.

DANA, Paul, American journalist: b. New York, 1852, Aug. 20. He is a son of C. A. Dana (q.v.), and was educated at Harvard and the Columbia Law School. He began journalism on his father's paper, the New York *Sun*, and after the latter's death in 1897, was for several years its editor-in-chief, retiring in 1903. He was for several years park commissioner of New York.

DANA, Richard: 1699, July 7—1772, May 17; b. Cambridge, Mass.: lawyer. He graduated at Harvard college 1718, studied law, and settled in Boston to practice. He attained large distinction at the bar; was prominent in the patriotic movements preceding the revolutionary war, administered to the sec. of the Mass. province a special oath obligating him not to attempt to execute the obnoxious stamp-act, 1769, investigated and reported on the massacre of citizens by British soldiers 1770, Mar. 5, presided frequently over the Boston town-meetings, was a leader among the Sons of Liberty, and a representative in the Mass. general assembly.

DANA, Richard Henry: 1787-1879, Jan. 6; b. Cambridge, Mass.: poet and novelist. After three years at Harvard college, he adopted law as a profession, but eventually applied himself to literature. In 1817-20, he was a contributor to the *North American Review*, and assisted in its editorship. The *Idle Man*, which contains many of his best prose efforts, was a periodical commenced 1821, but was a commercial failure, soon discontinued. Having at an earlier date published the *Dying Raven*, a poem of merit, he came forward, in 1827, with the *Buccaneer*, and other poems, and in 1839 he delivered a series of lectures on Shakespeare.

DANA, Richard Henry, ll.d.: legist and author: 1815, Aug. 1—1882, Jan. 7: b. Cambridge, Mass.; son of Richard Henry Dana. He entered Harvard, but incurred suspension, then returned, but an affection of the eyes compelled him to quit study, though he graduated 1837. Meanwhile he shipped as a sailor on the brig. *Pilgrim* for a voyage round Cape Horn: the fruit of this experience was his classic work *Two Years Before the Mast*, 1839, republished with additions 1869. He studied law under Judge Story, was admitted to practice 1840, and the next year published his work on sea-usages and laws, *The Seaman's Friend*. He edited, with notes and textual additions, *Wheaton's International Law*, 1866. William Beach Lawrence, who also had annotated *Wheaton*, charged Dana with pirating his notes; and because of that charge, unrefuted (as Dana had no opportunity of explaining before the senate committee), the nomination of Dana, by President Grant for minister to England was rejected by the senate, after President Grant had refused to withdraw the nomination. If Dana was chargeable with any error, it was not of intention. Dana visited Europe 1878 to pursue his study of international law, intending an exhaustive treatise on that subject; he died at Rome and was buried in the Protestant cemetery there, near the graves of Shelley and Keats.

DANAÆ, n. *dăn'a-ē:* order of fern-like acrogens.

DANAE, *dăn'a-ē:* in ancient *myth.*, daughter of Acrisius King of Argos, and Ocaleia. An oracle had announced that she would one day give birth to a son, who should kill his grandfather. Acrisius, of course, felt extremely

uncomfortable after this declaration, and took every precaution to keep Danae a virgin. He shut her up in a dungeon, where, nevertheless, she was visited by Zeus in a shower of gold, and became, in consequence, the mother of Perseus. Acrisius put both the mother and child into a chest, and exposed them on the sea. The chest drifted ashore on the island of Seriphos, and Danae and her child were saved. Danae remained in the island until Perseus had grown up and become a hero famous for his exploits. She afterward accompanied him to Argos. On his arrival, Acrisius fled, but was slain accidentally by Perseus at Larissa.

DANAIDE, *da-nā′ĭ-dē* [from Danaüs (q.v.)]: machine for utilizing hydraulic power; consisting of two cylinders, one within the other, revolving on a vertical axis.

DANAUS, *dăn′a-ŭs*, mythical personage, son of Belus and Anchinoë, brother of Ægyptus, and originally ruler of Libya. Thinking his life in danger from the machinations of his brother, he fled to Argos, accompanied by his 50 daughters, known as the DANAIDES, where he was chosen king, after the banishment of Gelanor, the last of the Inachidæ. The 50 sons of Ægyptus followed him, and, under the pretense of friendship, sought his daughters in marriage. Danaus consented, but on the bridal-night he gave his daughters each a dagger, and urged them to murder their bridegrooms in revenge for the treatment he had received from Ægyptus. All did so, except one, Hypermnestra, who allowed her betrothed, Lynceus, to escape. Danaus, as may naturally be supposed, found great difficulty in obtaining new husbands for his daughters; and in order to get them off his hands, instituted games, where they were given as rewards to the victors, though they could scarcely have been considered very tempting prizes. As a punishment for their crime, they were compelled, in the under-world, to pour water forever into a vessel full of holes. So runs the myth; but Strabo mentions an old tradition, which declares Danaus and his 50 daughters to have provided Argos with water, which is probably the origin of the scene in Hades. Greek art, of course, represents the Danaides in conformity with the popular myth. The tomb of Danaus, in the Agora of Argos, was shown as late as the time of Pausanias.

DANBURY, *dăn′bĕr-ĭ:* town, one of the caps. of Fairfield co., Conn.; 20 m. n.w. of Bridgeport, 28 m. w. by n. of New Haven, 69 m. n.n.e. of New York; at the n. terminus of the Danbury and Norwalk railroad, and on a branch of the Housatonic line. A temporary settlement was made there 1684, a Congl. meeting-house was erected 1696, and for many years the place was known by the Indian name of Paliquioque. In 1776, the place was made a depository for army stores; and when Gen. Tryon, the British gov. of New York, was informed of the fact, he headed a force of over 2,000 men, landed at Norwalk 1777, Apr. 25, marched immediately upon Danbury and set fire to the town and stores, destroying 3,000 barrels of pork, over 1,000 barrels of

flour, several hundred barrels of beef, 2,000 bushels of corn, 1,600 tents, and large quantities of rice, wine, and rum. The patriot Gen. Wooster hastened to the relief of Danbury from Fairfield, gave battle to the British at Ridgefield, and received a fatal wound. In 1780, Zadoc Benedict established in Danbury the first hat-factory in the United States, employed one journeyman and two apprentices, and produced three hats per day. From this has grown the enormous business which now distinguishes the town, gives employment to two-thirds of its citizens, and is conducted in 12 or more factories on an aggregate capital of over $1,500,000. The manufacturers of shirts and sewing-machines are the other chief industries. Danbury has great business activity; has many handsome residences, a co. court-house; a public library, the gift of William A., Alexander M., and George G. White; a large number of handsome churches, national and savings banks; the second largest graded school in the state; and several weekly newspapers. Pop. (1910) 23,502.

DANBY, *dăn'bĭ*, FRANCIS, A.R.A.: 1793, Nov. 16—1861; b. abt. 6 m. from Wexford, Ireland: painter. He was educated in the school of the Soc. of Arts, Dublin, and soon gave indications of artistic talent. His first attempts were sent to the Dublin Exhibition. After 1820, he took up his residence at Bristol, whence he sent to the Royal Acad., London, his *Disappointed Love* (1821); *Warriors of the Olden Time listening to the Song of their Minstrel* (1823); and *Sunset at Sea after a Storm* (1824). In 1825 Danby produced *The Delivery of Israel out of Egypt;* (1826), *Christ Walking on the Sea;* (1827), *The Embarkation of Cleopatra on the Cydnus;* (1828-9), *An Attempt to Illustrate the Opening of the Seventh Seal, The Passage of the Red Sea,* and *The Deluge.* He resided on the continent 1829-41, during which interval he executed very few paintings. On his return, he took up his abode at Exmouth, where he died. Among his later works are *A Morning at Rhodes* (1841); *The Enchanted Island* (1841), *The Contest of the Lyre and Pipe in the Valley of Tempe* (1842); *The Tomb of Christ after the Resurrection; Fiensford Lake* (Norway)—*a Sudden Storm passing off; Caius Marius among the Ruins of Carthage* (1848); and *The Departure of Ulysses from Ithaca* (1854).

DANCE, v. *dăns* [F. *danser,* to dance—from O.H.G. *dansôn:* G. *tanzen;* Dan. *dandse,* to frisk, to dance: comp. Gael. *danns,* to dance—from *dan,* a musical composition]: to move or skip with the feet, keeping time to music; to move nimbly; to leap and frisk about; to move with measured steps. DAN'CING, imp. DANCED, pp. *dănst.* DAN'CER, n. *-sẽr,* one who. DANCE, or DAN'CING, n. a leaping and frisking about; a measured stepping and jumping, nearly always to music; a graceful movement of the figure. TO DANCE ATTENDANCE, to strive to gain favor by assiduous civilities and officious endeavors to please. TO LEAD ONE A DANCE, to put one to much useless trouble.

DANCE, George, Jr.: 1741–1825, Jan. 14; b. London; architect. He was an early member of the Royal Acad., and its prof. of architecture many years; succeeded his father, also an architect, as city surveyor of London 1768–1816; and built Newgate prison, Shakespeare gallery, Bath theatre, St. Luke's hospital, and the Guild-hall.

DANCE OF DEATH (L. *Chorea Machabæorum*, F. *La Danse Macabre*): class of allegorical representations, illustrative of the universal power of Death, and dating from the 14th c. When the introduction of Christianity first banished the ancient Germanic conception of a future state, a new description of death-mythology arose, partly out of biblical sources, partly out of the popular character itself, wherein the Last Enemy was represented under simple and majestic images, such as that of a husbandman watering the ground with blood, plowing it with swords, rooting out weeds, plucking up flowers, or felling trees, sowing it with corpses; or of a monarch assembling his armies, making war, taking prisoners, inviting his subjects to a festival, or citing them to judgment. But with a gradual change in national manners came a change in the mode of treating the subject, and it was associated with every-day images, such as the confessional, chess-playing, and, above all, with the adjuncts of a festival—viz., music and dancing. This tendency to familiarize the theme increased during the confusion and turmoil of the 14th c., when the national mind alternated between fits of devotion and license, or blent both elements in satire and humor. Such a mood as this naturally occupied itself with personifying Death, and adopted by preference the most startling and grotesque images it could find—that of a musician playing to dancing-men, or a dancer leading them on; and as the dance and the drama were then intimately connected, and employed on religious occasions, this particular idea soon assumed a dramatic form.

This drama was most simply constructed, consisting of short dialogues between Death and four-and-twenty or more followers, and was undoubtedly enacted in or near churches by religious orders in Germany during the 14th c., and at a rather later period in France. It would appear that the seven brothers, whose martyrdom is recorded 2 Maccabees, vii., either played an important part in the drama, or the first representation, at Paris in the Cloister '*aux Innocents*,' fell upon their festival, and hence the origin of the ancient name, Chorea Machabæorum, or La Danse Macabre. As early as 1400, the dramatic poem was imitated in Spain, and appears there in 79 strophes of 8 lines each (*La Dança General de los Muertos*), but it did not spread; while the French, having a love for pictorial representation, very early affixed an illustration to each strophe, and in 1425 painted the whole series on the churchyard-wall of the Cloister of the Innocents, where the Dance of Death was habitually enacted. We find the subject treated

in painting, sculpture, and tapestry, in the churches of Anjou, Amiens, Angers, Rouen, to say nothing of the numerous wood-cuts and accompanying letter-press which succeeded the invention of printing. From Paris, both poem and pictures were transplanted to London (1430), Salisbury (about 1460), Wortley Hall in Gloucestershire, Hexham, etc.

But nowhere was the subject so variously and strikingly treated as in Germany. A picture in one of the chapels of the Marienkirche, at Lübeck, still, in spite of repeated repaintings, bearing the unmistakable impress of the 14th c., exhibits the very simplest form of the drama, and has some genuine Low-German verses attached to it. Here we see 24 figures, partly clerical, partly lay, arranged in a descending scale, from the pope himself down to a little child, and between each of them a dancing-figure of Death, not in the form of a skeleton, but a shrivelled corpse, the whole being linked in one chain, and dancing to the music of another Death. This representation is almost the same as a very ancient one at La Chaise-Dieu, in Auvergne, and points to the identity of the original dramatic spectacle in both countries.

The celebrated Dance of Death on the cloister walls of the Klingenthal, a convent in Basel, though painted probably not later than 1312, exhibited a departure from the simplest form—the number of persons exceeding the original 24, and the chain being broken up into separate couples. But both alike are to be regarded only as scenes from a drama, and cannot, therefore, be justly compared with a contemporary Italian painting, the 'Triumph of Death,' by Andrea Orcagna. The acted drama endured till the 15th c.; and while there were varieties in the paintings, the poem, the most important feature, remained almost unchanged.

About the middle of the 15th c., however, the drama being altogether laid aside, the pictures became the main point of interest, the verses merely subsidiary. Accordingly, we find from this time the same pictures repeated in different places, with different verses, or no verses at all, till at length both verses and pictures entirely change their original character. The Dance of Death being transferred from the quiet convent walls into public places, gave a new impulse to popular art. Duke George of Saxony had, in 1534, the front of his Dresden castle ornamented with a life size bas-relief of the subject, and other representations are to be found at Strasburg and Bern There was a Dance of Death painted round the cloister of old St. Paul's in London, in the reign of Henry VI.; and there is a sculptured one at Rouen, in the cemetery of St. Maclou. But Holbein has the credit of availing himself most effectively of the original design, and giving it a new and more artistic character. Departing from the idea of a dance, he illustrated the subject by 53 distinct sketches for engravings, which he called *Imagines Mortis*. The originals of these are at St. Petersburg, and impressions of them have been frequently repeated under different names.

Author'ities on this subject are: Peignot's *Recherches sur les Danses des Morts* (Dijon and Paris 1826); Massman's *Baseler Todtentänze* (Stuttgart 1847), and Douce's *The Dance of Death* (Lond. 1833).

DANCETTE, a. *dăn sĕt'* [F.—from the zigzag shape]: applied to a line of division intended in a manner similar to the zigzag molding in architecture: N. the zigzag or chevron fret or molding peculiar to Norman architecture.

Dancette.

DANCETTE, *dân-sĕt'*: one of the lines of partition in Heraldry, which differs from indented (q.v.) only in the greater size of the notches. The indentations where the division is *per fess* dancette never exceed three in number.

DANCING: rhythmical movement of the body, espe cially of the lower limbs, usually keeping time to music. Dancing may also be said to be as old as the world, and prevails in rude as well as in civilized nations. Children dance, as the lower animals frisk and gambol, as by instinct. Early records, sacred and profane, make mention of dancing, and in most of the ancient nations it was a constituent part of their religious rights and ceremonies. They danced before their altars and round the statues of their gods. The Greek chorus, 'in the oldest times, consisted of the whole population of the city, who met in the public place (*choros*, the market-place), to offer up thanksgivings to their country's god, by singing hymns and performing corresponding dances.' The Jewish records make abundant mention of dancing. Miriam and the women of Israel danced to their song of triumph, with sound of timbrel, when the Israelites had passed through the Red Sea as on dry land; David danced before the Ark. It seems certain that the primitive Christians sometimes danced in their praises at their religious meetings, though we have no mention of this in the New Testament. The Greeks made the art of dancing into a system expressive of all the different passions, the dance of the Eumenides, or Furies, especially, exciting such terror that the spectators seemed to see these dreaded deities about to execute Heaven's vengeance on earth. The most eminent Greek sculptors did not disdain to study the attitudes of the public dancers for their art of imitating the passions. In Homer, we read of dancing and music at entertainments. Aristotle ranks danc ing with poetry, and says, in his *Poetics*, that there are dancers who, by rhythm applied to gesture, express manners, passions, and actions. In Pindar, Apollo is called the dancer; and Jupiter himself, in a Greek line, is represented as in the act of dancing. The Spartans had a law obliging parents to exercise their children in dancing from the age of five. This was done in the public place, to train them for the armed-dance. They were led by grown men, and all sang hymns and songs as they danced. The young men danced the Pyrrhic dance, in four parts, expressive of overtaking an enemy and of a mock-fight.

Dancing, as an entertainment in private society, was performed in ancient times mostly by professional dancers, and not by the company themselves. Among the sedate Romans, in fact, it was considered disgraceful for a free citizen to dance, except in connection with religion. Having professional dancers at entertainments is still the practice among eastern nations. In Egypt there are dancing and singing girls, called Almé, who improvise verses as in Italy. They are highly educated, and no festival takes place without them. They are placed in a rostrum, and sing during the repast; then descend, and form dances that have no resemblances to ours. In all parts in India there are Nautch girls or Bayaderes (q.v.), who dance at festivals and solemnities.

Among savage nations the passion for dancing is most strongly manifested. Their dances are mostly associated with religion and war; and the performers work themselves into a state of frantic excitement—a kind of mechanical intoxication. As civilization advances, dancing—amateur dancing, at least—assumes a more and more subdued character. However common may be its misuse, it is capable of being made a healthful exercise. See Acrobats: Ballet: Pantomime: Country-dance: Quadrille: Polka: etc.

DANCING MANIA: An abnormal and irrepressible tendency to dancing movements, or other movements of a rhythmic kind, generally of an epidemic character and affecting numbers of people ordinarily well-balanced. Two outbreaks occurred during the 14th and 15th centuries in Germany. Similar phenomena are reported among primitive peoples. The movements are violent in character and may continue until the person afflicted falls exhausted. Vivid hallucinations are said to accompany the experience. Allied phenomena are undoubtedly represented in the violent exercises peculiar to the religious excitement fostered in their ceremonies by certain modern Christian sects, especially in connection with conversion.

DANCOURT, *dân-koor*, Florent Carton, French actor and playwright: b. Fontainebleau 1661, Nov. 1; d. Courcelles-le-Roi, France 1725, Dec. 6. Although he personated the first characters in high comedy, he succeeded best as an author in low comedy,. He displayed much ingenuity and wit in introducing upon the stage amusing subjects of real occurrence in his time. Louis XIV. was very fond of humorous pieces, and Dancourt often used to read his productions to the king before they were played. Among his dramas are: *Le Chevalier à la Mode* (1687); *Les bourgeoises de qualite* (1700): *Les trois cousins* (1700).

DANDELION, n. *dăn'dĭ-lī'ŏn* [F. *dent*, tooth; *de*, of; *lion*, lion—*lit.*, the lion's tooth] (*Leontodon taraxacum*, or *Taraxacum officinale*): plant of the nat. ord. *Compositæ*, sub-order *Cichoraceæ*, common throughout Europe, in pastures and by waysides; and now so perfectly naturalized in many parts of North America, as to be there

one of the most familiars pring flowers. The names Dandelion and Leontodon (Fr. and Ger. lion's-tooth) both have reference to the form of the leaves. The whole plant abounds in a milky juice, containing a peculiar crystalline principle called *Taraxacin* has a bitter taste, and is tonic, deobstruent, and diuretic. Dandelion root is employed in medicine, in the form of infusion, decoction, and extract, chiefly in diseases of the liver and chronic affections of the digestive organs. It contains resin, inuline, sugar, etc. When roasted and ground, it is sometimes used also as a substitute for coffee. *Dandelion coffee*, however, is usually a mixture of ordinary coffee and the powder or extract of Dandelion-root; and *Dandelion chocolate* is composed of one part of common chocolate and four parts of the powder of Dandelion-root. The young leaves, when blanched, are good salad, resembling lettuce or endive.

DANDER, v. *dăn'dẽr* [F. *dandiner*, to walk awkwardly —from OF. *dandin*, clumsy, boobyish]: in *Scot.*, to walk without thinking whither; to saunter. DAN'DERING, imp. DANDERED, pp. *dăn'dẽred*. DANDERS, n. plu. *dăn'dẽrz*, the refuse or cinders from a blacksmith's fire.

DANDER, n. *dăn'dẽr:* dandruff: [vulg. U. S.]: anger; to have one's dander raised, to get into a passion.

DANDLE, v. *dăn'dl* [It. *dondolare*, to dandle a child; *dondola*, a child's playing baby: Ger. *tandeln*, to toy, to trifle]: to move up and down, as an infant on the knee; to amuse; to fondle. DAN'DLING, imp. DANDLED, pp. *dăn'dld*. DAN'DLER, n. one who.

DANDOLO, *dân'do-lo*, ENRICO, Doge of Venice: abt. 1110 (or 1115)—1205, June 1; of a famous Venetian family, which gave four doges to the republic. Eminent in learning, eloquence, and knowledge of affairs, he ascended from one step to another, until, 1173, he was sent as ambassador to Constantinople, and in 1192 was elected doge. In this latter capacity, he extended the bounds of the republic in Istria and Dalmatia, defeated the Pisans, and (1201) marched at the head of the Crusaders. He subdued Trieste and Zara, the coasts of Albania, the Ionian Islands, and Constantinople (1203, July 17). When the emperor Alexius, who had been raised to the throne by the exertions of Dandolo, was murdered by his own subjects, Dandolo laid siege to Constantinople, and took it by storm, 1204, Apr. 13. He then established there the empire of the Latins, and caused Count Baldwin of Flanders to be chosen emperor. By the treaty of partition which he concluded with the other leaders of the crusade, Venice obtained possession of some of the islands of the Ionian Sea, and of the Archipelago, several harbors and tracts of land on the Hellespont, in Phrygia, the Morea, and Epirus, an entire quarter of Constantinople, and also, by purchase, the island of Candia. Soon after this, Dandolo died in Constantinople, and was buried in the Church of St. Sophia. His monument was destroyed by the Turks at the taking of Constantinople 1453.

DANDRUFF, n. *dăn'drŭf*, or DAN'DRIFF, n. *-drĭf* [F. *teigne*, scurf: W. *ton*, skin; *drwg*, bad, evil]: a scurf on the head that comes off in small particles or scales.

DANDY, n. *dăn'dĭ* [It. *dondola*, a toy: Ger. *tandeln*, to trifle, to toy; comp. Gael. *deanta*, perfectly finished]: a man dainty in his attire and manners; one who dresses to excess, like a doll; a fop; a coxcomb. DAN'DYISH, a. *-ĭsh*, like a dandy. DAN'DYISM, n. *-ĭzm*, the manners and dress of a dandy. DANDY-NOTE, a document used for the shipment of goods. For goods removed from the warehouses of the English customs, a form of dandy-note and pricking-note combined is used.

DANE, n. *dān:* native of Denmark. DANE'GELT, *-gĕlt*, or DANEGOLD, a tax, first of 1*s.*, afterward 2*s.*, on every hide of land, formerly paid by the English for maintaining forces to oppose the Danes, or to procure peace from them by giving tribute. The tax was continued after the conquest, as one of the rights of the crown, till the time of Stephen. DANISH, a. *dā'nĭsh*, of or belonging to the Danes: N. the language.

DANE, *dān*, NATHAN, LL.D.: 1752, Dec. 27—1835, Feb. 15; b. Ipswich, Mass.: lawyer. He graduated at Harvard College 1778, was admitted to the bar, and began practice at Beverly 1782. In the latter year he was elected a member of the Mass. house of representatives, and served till 1785, when he became a member of the continental congress, to which he was twice re-elected. In 1787 he drafted the ordinance for the organization and govt. of the Northwest Territory, in which he inserted clauses prohibiting slavery and any laws impairing the obligation of contracts; 1790–99, was a member of the Mass. senate; 1795, commissioner to revise the state laws; 1811, commissioner to revise and publish all charters granted in the state; 1812, presidential elector; and 1814, member of the Hartford convention. He established the Dane professorship of law in Harvard's law school 1829, and published *An Abridgment and Digest of American Law*, 9 vols. 8vo (1823–29).

DANEBROG, *dăn'-ē-brog*, ORDER OF: second of the Danish orders; instituted by King Waldemar 1219. The word *brog* in old Danish signifies 'cloth,' thus Danbrog is equivalent to the cloth or banner of the Danes. The order is a sort of glorification of the old national flag of Denmark, which long floated, like the oriflamme of France, at the head of the army, and was fabled to have fallen from heaven at the battle of Volkmar, 1219. The order is meant to recompense services rendered to the state, whether civil or military, and irrespective of age or rank. The decoration of the order consists in a cross of gold *pattée*, enamelled with white, and suspended by a white ribbon, embroidered with red.

DANE'-LAGE, or DANELAGH, or DANE-LAW: district in England before the Norman conquest. After the overthrow of the Danes under Guthrun at Ethandune by King

Alfred (878), a treaty was concluded between the two, in virtue of which the entire kingdom of Wessex, from Somerset to Kent, was evacuated by the Danes, who were, however, allowed to retain the greater part of the e. coast of England, including the whole of Northumbria. This district was called Danelagh or Dane-law, because the inhabitants were ruled by Danish and not by English law.

DANFORTH, *dăn'fōrth*, CHARLES: 1797–1876, Mar. 22; b. Mass.: inventor. In his youth he served as a sailor before the mast, and subsequently was active in the Mexican war. In 1829 he settled in Paterson, N. J., where he became partner in a machine shop which afterward extended its dimensions till it became one of the largest locomotive manufactories in the United States, under the name of the Danforth locomotive and machine works. At first his operations were confined to the manufacture of counter-twisters, spinning speeders, throstle-frames, spinning-frames, bobbins, and flyers, of his own invention. In 1852 he began manufacturing locomotives and other pieces of heavy machinery.

DANG, v. *dăng* [Scot. *ding*, to drive: Icel. *danga*, to beat]: in *OE.*, to beat down; to dash down; to strike with violence; to overcome. N. in *slang*, an imprecation, a softened form of *damn*. DANG'ING, imp. DANGED, pp. *dănged*.

DANGER, n. *dān'jĕr* [F. *danger*—from OF. *dangier*, authority, peril: mid. L. *damnum*, a fine imposed by legal authority: F. *damager*, to distrain or seize cattle found in trespass: mid. L. *domĭgērĭŭm*, the power of exacting a damnum or fine for trespass—*lit.*, in the power of one's enemy or at his mercy]: exposure to any injury or evil; peril; hazard; risk; jeopardy. DAN'GEROUS, a. *-ŭs*, unsafe; perilous; full of danger. DAN'GEROUSLY, ad. *-lĭ*. DAN'GEROUSNESS, n. the state of being in peril. IN DANGER OF, subjected to any one; in the power of one's enemy; liable in a penalty to, as '*in danger of* the judgment.' *Note.*—Originally *danger* meant, the authority, power, or rights of feudal lords in their various tolls, exactions, and confiscations; then the sense passed over from the authority of the lord to the sufferings of the merchants or travellers, and came finally to signify 'peril; hazard'—see Brachet.

DANGLE, v. *dăng'gl* [Icel. *dengia*, to knock: Dan. *dingle;* Icel. and Sw. *dangla*, to dangle, to swing to and fro]: to hang loose and swinging; to hang on any one; to be a humble officious follower. DAN'GLING, imp. DANGLED pp. *dăng'gld*. DAN'GLER, n. *-glĕr*, one who dangles, particularly one who hangs about women. DINGLE-DANGLE, expresses the motion of a thing swaying to and fro.

DANIEL, *dăn'yĕl* or *dăn'ĭ-ĕl:* fourth of the greater Hebrew prophets; who lived about B.C. 600. He was a contemporary of the prophet Ezekiel, and was carried captive to Babylon in the fourth year of Jehoiakim. He was one of the youths selected to be brought up for future service at the court of the conqueror, and received instruction in all

the learning of the Chaldæans. His skill in the interpretation of dreams procured for him the royal favor. He rose to be gov. of the province of Babylon under Nebuchadnezzar; and under Darius, the Mede, to be first president of the whole Medo-Persian empire, a dignity inferior only to that of Darius himself. The time and place of his death are unknown. He was alive, however, in the first year of the reign of Cyrus, but did not return to Judæa with his countrymen on their release from captivity. Epiphanius and others affirm that he died at Babylon; but the common tradition is that he expired at Susa or Shusan in Persia, when upward of 90 years of age; and at the present day, a tomb bearing his name is the only standing building among the ruins of that ancient city. Daniel was the only one of the Hebrew prophets who had high worldly prosperity. Ezekiel mentions him as a model of wisdom and piety (Ezkl. xiv. 14; xxviii. 3).

Daniel, Book of: generally accepted as having been written by the prophet whose name it bears, and whose history it records. Porphyry, indeed, in the third c., and others in modern times, alleged that it was the work of some unknown author about B.C. 175; *after* the events in the life of Antiochus which it seems to predict. Against this assertion, which rests on no historical basis, are the following facts and considerations.

1. The Hebrew and Aramaic original was in the Jewish canon, as described by Josephus and as arranged (we have no reason to doubt) by Ezra, not later than B.C. 450. 2. Written partly in the one language and partly in the other its author must have been acquainted with both; narrating correctly Chaldean modes of life, he must have been familiar with them; describing intelligently the career of successive monarchs, he must have been in favor with them all. These qualifications meet in Daniel, as his history is given in the book; and in such a one as he only. 3. Alexander, in the rush of his conquest, granted exceptional privileges to the Jews. These cannot be accounted for in any other way so well as by the statement of Josephus that the high priest in the temple showed Alexander the book of Daniel in which the conquest of Persia by Greece was foretold. 4 The Greek version of the book contained in the Septuagint was, in all probability, made *before* the time of Antiochus. 5. From the first book of Maccabees we learn that Jews in the very days of Antiochus drew comfort and strength from the book of Daniel, as from other books of the Old Testament. 6. From the fact that Berosus in his list of Babylonian kings does not mention Belshazzar. Objectors argued that there was no such king; and consequently that Daniel's statements concerning him are false. But in 1854 Sir Henry Rawlinson found a Babylonian tablet which speaks of Bilsharuzar as associated on the throne with his father Nabonidus. This not only confirms the Scripture narrative, but puts also in a striking light the fact that when Belshazzar made Daniel the *third* ruler in the kingdom, he placed him next

to himself. 7. The authority of Christ establishes the book as having been written by Daniel, and as containing prophecies about to be fulfilled. The book contains both prophecy and history; and some of the history is prophecy fulfilled.

The prophecies are, in outline, as follows: 1 Four kingdoms are represented by the parts of the image in Nebuchadnezzar's dream; to be followed and destroyed by a fifth represented by a stone cut out of a mountain without hands. 2. Daniel's vision of four wild beasts coming up out of the sea; representing, probably, the same four kingdoms as rising out of tumults and wars. 3. The overthrow of the Persians by the Greeks, under the emblem of a ram attacked by a goat rushing from the west without touching the ground. 4. The 70 weeks; 70 times 7 days, signifying 490 years, from the command to rebuild Jerusalem to the coming and death of the Messiah. 5. A revelation (given to Daniel by the Son of God) beginning from the time then present, and extending to the final resurrection of the dead.

DANIEL, John Moncure: 1825, Oct. 24—1865, Mar. 30; b. Stafford co., Va.: editor. He was educated by his father, studied law, and became a librarian in Richmond 1845. In 1847 he was attached to the staff of the Richmond *Examiner*, a democratic newspaper just started, and with few interruptions remained its editor till death. During this period he fought several duels with parties offended with his extreme radicalism and invectives. He was U. S. minister to Italy 1853-60, and at the beginning of the civil war hastened home and engaged in field service on the staff of Gen. A. P. Hill till his right arm was shattered by a bullet. He then resumed his editorship of the *Examiner*, attacked the Confederate pres. and treas., was challenged to a duel by the latter and accepted, though unable to use his pistol arm, and was shot in the leg, 1864. He was an early advocate of secession in Va., and one of the first to predict the downfall of the Confederacy.

DANIEL, *dăn'yĕl* or *dăn'ĕl* Samuel: English poet: 1562-1619, Oct. 14; b. near Taunton, Somersetshire; son of a music-master. He entered Magdalen Hall, Oxford, 1579, but quitted the university without taking a degree. For some time he acted as tutor to Anne Clifford, daughter of the Earl of Cumberland. In 1603, he was appointed master of the queen's revels, and inspector of the plays to be represented by the juvenile performers. Subsequently, he held other offices about the royal household. Toward the close of his life, he retired to his farm at Beckington, in his native county, where he died. Daniel is an elegant though not a great poet. His writings are pervaded by a moral thoughtfulness and purity of taste which are remarkable, but they lack that vital energy of movement and memorableness of expression which result from genuine inspiration. The 'well-languaged Daniel' is therefore not the most interesting of the Elizabethans, though his style is quite modern. His works include sonnets, epistles,

masks and dramas; but his chief production is a poem in eight books, entitled *History of the Civil Wars between York and Lancaster.*

DANIEL, TOMB OF: The site of Daniel's sepulchre has been variously given. One authority assigns the royal vault at Babylon as his resting-place. The more probable information appears in the 'Itinerary' of Benjamin of Tudela, who travelled in Palestine about the middle of the twelfth century. In the façade of a synagogue at Susa, the traditional tomb of Daniel was pointed out to him. He states, however, that the tomb does not contain Daniel's remains, which were discovered in Susa about the middle of the seventh century. It was held that the remains bring good luck, which gave rise to much disagreement between the people living on the two banks of the Choaspes. Each wished the remains transferred to its side, and it was finally decided that they should rest alternately one year on each bank of the river, until a Persian ruler, visiting the city, forbade the practice as disrespectful, and commanded the bier to be held by chains to the middle of the bridge, upon which spot he built a chapel. Fishing within a mile of Daniel's bier was prohibited. Mohammedan traditions also give Susa as Daniel's burial-place, although another spot is assigned for his tomb. Popular traditions in the Orient are often elastic.

DANIELITE, n. *dăn'yel-īt:* a member of an order founded 1876 by a lifelong abstainer and vegetarian, T. W. Richardson, to bring about a non-animal diet. The name is derived from the circumstance that the prophet Daniel refused to eat the 'king's meat.' See Dan. i. 8-16.

DAN'IELL, JOHN FREDERICK, D.C.L.: 1790, Mar. 12—1845, Mar. 13; b. London: pupil of Prof. Brande, with whom he made several scientific tours; elected a fellow of the Royal Soc. 1814, and in 1816 started, in connection with Prof. Brande, the *Quarterly Journal of Science and Art.* From this period, Daniell gave almost his whole time to chemistry and meteorology. In 1823, he published *Meteorological Essays,* still the standard work on meteorology; in 1824, the Horticultural Soc. awarded him their silver medal for *Essay on Artificial Climate.* In 1831, he was appointed prof. of chemistry in King's College, London; and in 1839, published *Introduction to Chemical Philosophy.* In 1843, he received the degree D.C.L. from the Univ. of Oxford. He had the great honor of being the only person who ever obtained all the three medals in the gift of the Royal Society. Besides his professorship in King's College, Daniell held also the post of lecturer at Addiscombe, and of examiner in chemistry to the Univ. of London. Daniell's *Meteorological Essays* was the first attempt to account, in a truly philosophical manner, for the known phenomena of the atmosphere. He wrote a large number of interesting and valuable papers for the Royal Society. For an account of his new hygrometer, see HYGROMETER.

DANISH LANGUAGE AND LITERATURE.

DANISH LANGUAGE AND LITERATURE: the Danish language, which, with slight modifications, is common to Denmark and Norway, is a branch of the ancient Gothic, and has been retained in Island (Iceland) almost in its original form.

The language used in D. about the middle of the 10th c. was common to the three Scandinavian kingdoms, Island (Iceland), Feroerne, Orkenoerne (Orkney), Shetlandsoerne, parts of England, Scotland and Ireland. This language was then, and many years later, called the Danish tongue (*dönsk tunga*). The oldest memorials of the Danish are codes of laws, as the *Skaanske Lov*, and the old and new *Sjællandske Lov*, promulgated by Valdemar the Great 1162 and 71; but these, no less than the writings of Harpestreng, canon of Roskilde (1244), already show marked deviations from the Icelandic, in consequence of the intermixture of the Anglo-Saxon, English, and Norman elements, due to the Danish occupation of England and the immigration of monks and artisans into Danmark from Britain. The influence of the English dialect was again modified toward the close of the 12th c. by the influx of Germans into the country. Saxo Grammaticus, father of Danish history (d. 1204), wrote, like almost all his ecclesiastical brethren at that day, in Latin, as did also his contemporary, the knight Svend Aagesen. The Danish Kjæmpeviser are the richest poetical remains of the folk-lore of the middle ages in Europe, and consist—1. Of narratives and songs of giants, demigods, and other supernatural creatures of the Scandinavian mythology; 2. Of romantic songs and tales connected with these mythical beings; and, 3. Of historical verses, referring to a later period. The names of the writers are unknown, and these compositions seem rather the expression of the entire people than the production of individual poets. Many have, from time immemorial, been associated with certain melodies, which have secured them a permanent place in the hearts of the people, whose disposition leads them to dwell with fondness on the memory of by-gone times and events, and to seek in the glory of the past a compensation for the national humiliation and reverses of the present. The first printed collection of the Kjæmpeviser is due to the royal historiographer, Vedel, and appeared at Ribe, 1591; another edition (Kjobh. 1695) by Peter Syv, found its way to almost every peasant's cottage; but the most complete of any is probably that by Nyerup and Rahbek, 5 vols. (Kjobh. 1812-14). After the Reformation, the national literature was comparatively neglected. Among the best writers were Christian Pedersen (b. 1480), who, after having made a metrical version of the ancient national chronicles, devoted himself to the diffusion of the Lutheran faith, and made Danish translations of the new Testament; and the reformer Hans Tausen (b. 1494), who wrote a volume of sermons, and translated the Pentateuch into Danish. The Danish

language acquired stability and new life by the translation of the whole Bible, which, by order of King Christian III., was effected 1550 by Christen Pedersen, Palladius, and other professors of the university. The close of the 16th c. was memorable for many admirable writers on history which it produced in Denmark.

Among those who edited and annotated the ancient Danish and Icelandic historical chronicles were Peder Claussen, A. S. Vedel, and Arild Hvitfeldt, whose respective works supply invaluable materials to the historical inquirer. These men were contemporaries of the great astronomer, Tycho Brahé, and, like him, experienced the caprices of court-favor. The 17th c. shows a large number of able writers, among whom were Longomontanus, pupil of Tycho Brahé; the family of Bartholin, numbering 17 in three generations, all known for the ability of their writings on medical, philosophical, and mathematical subjects in Latin, German, and Danish; the family of the Pontoppidans, 11 in number, all of whom have left memorials of proficiency in philology and history, and of acquaintance with the theology and natural history of the times; Arreboe, father of Danish poetry, who wrote on sacred subjects, and in his principal work, *Hexaemeron,* described in epic verse the events of the first six days of creation; Steno, the anatomist; and the lyrical poet, T. Kingo. A new era began with the genial and versatile Ludvig Holberg (b. 1684), who wrote in Latin, French, German, and Danish, and has left very numerous works on history, biography, and topography, but whose fame among his countrymen will ever rest on his inimitable comedies, farces, and satirical compositions. His genius and his writings gave an impetus to the cultivation of the Danish language, which not all the studied neglect of the court-party, and their persistence in the use of German, could check. The 18th c. produced many good historical critics—for instance, Torfæus, Langebek, Gram, Guldberg, Suhm, Magnæus, the Icelandic scholar, Thorlacius, and Thorkelin, learned in ancient northern lore, and Kolderup-Rosenvinge, the jurist.

Among the epic and dramatic poets of that age, Ewald stands foremost, whose national lyrics evince true poetic genius. The close of the century was, however, unfavorable to mental development and freedom of thought; and the best writers, as in the case of Malte-Brun and the poet Heiberg, were either compelled to leave the country, or to abstain from giving expression to their opinions. Among the more recent writers are the poet Ohlenschlæger, —whose national tragedies and lyrical legends of Scandinavian mythology have rekindled the long slumbering fire of Danish patriotism,—Baggesen, Winther, Hauch, F. P. Müller, Hertz, H. C. Andersen, Holst, and Overskou. Ingemann, who stands first as a writer of historical novels, also wrote good lyrics, and his subjects were generally taken from the national history. Short tales or novelettes

seem, however, to be more congenial to the taste of the Danes, and most of their best writers of fiction have adopted this form—for instance, Blicher, Heiberg, Andersen, Winther, Carit Etlar, etc. The names of Orsted, Schouw, Forchhammer, Rask, Finn Magnussen, Martensen Kierkegaard, Molbeck, Brorson, Worsaa, Grundtvig, Petersen, and Eschricht, etc., sufficiently attest the stand that the physical sciences, philology, philosophy, theology, and archæology have attained in Denmark. Thorvaldsen, by the gift of his works to the nation, has created a taste and appreciation for sculpture and the arts generally among his countrymen, and has thus given a new direction to the mental culture of the Danes.

The Danish language is peculiarly soft, from the great number (ten) of its distinct vowel-sounds, the absence of gutturals, and the softening of all the consonants. It may be said to bear the same relation to the ancient tongue, the Dönsk Tunga (Norræna) that Italian does to Latin, force and precise inflections having been sacrificed for melody and simplicity.

DANITES, *dân'its* or *dâ'nīts:* among the Mormons in western America, a secret order, either controlled or used by the highest officials of the Mormon Church; openly accused of numerous murders.

DANK, a. *dănk* [synonymous with *damp;* prov. Sw. *dank,* a moist place in a field: Dut. *donker;* AS. *duncor;* Ger. *dunkel,* dark, obscure]: close and damp; very humid: N. humidity; moisture. DANK'ISH, a. *-ĭsh,* somewhat damp. DANK'ISHNESS, n.

DAN'NEBROG: see DANEBROG.

DANNECKER, *dân'nĕk-ėr:* JOHANN HEINRICH VON: 1758, Oct. 15–1841, Dec. 8; b. Waldenbuch, dist. of Stuttgart: German sculptor. His parents were in the humblest circumstances; but through the favor of the Duke of Würtemberg, he received a good education at the military acad. at Ludwigsburg. His artistic talents were rapidly developed. In 1780, he obtained the prize for the best model of *Milo of Croton destroyed by the Lion;* and in 1783 went to Paris, where he studied two years under Pajou; after which, he went to Rome, where he met Goethe, Herder, and Canova, to the last of whom he was indebted for instruction in his profession. At Rome, D. remained till 1790, and executed in marble his statues of *Ceres* and *Bacchus.* On his return to Germany, the Duke of Würtemberg appointed him prof. of sculptor in the acad. at Stuttgart, in which city he resided till his death. D. was undoubtedly one of the best of modern sculptors. His forte lay in expressing individual characteristics, in which respect he has not been surpassed. This gives great value to his busts of distinguished persons, such as Schiller, Lavater, Gluck, and the kings Frederick and William of Würtemberg. His perceptions of the beautiful and the delicate, especially in the female form, also are considered by his

DANTE.

countrymen to be more exquisite and true than those even of Canova. His earlier works are chiefly pagan in their subjects, while his later ones are Christian, and are pervaded by a pensive idealism. Of the former, besides those already mentioned, the principal are *Sappho*, *Love*, *Psyche*, and *Ariadne as the Bride of Bacchus riding on a Leopard* (at Frankfurt); of the latter, *Christ*, *John the Baptist*, and *Faith*.

DANTE, (properly, DURANTE) ALIGHIERI, *dän'te*, It. *dân'tā â-le-ge-ā'rē:* one of the greatest poets of all time, incomparably the greatest among Italians: 1265–1321, Sep. 14, b. Forence. The circumstances and fortunes of his life are mostly involved in uncertainty. His family was, by his own account, one of the most illustrious in the city. His father dying while D. was young, his education devolved upon his mother, Bella. In this duty, in which she displayed great fidelity and judgment, she seems to have been counselled and aided by the statesman, scholar, and poet, Brunetto Latini. The elements of knowledge D. probably acquired in Florence; in riper years, he studied philosophy at Bologna, and Padua. After his banishment, he pursued theology for a time at Paris, and, if Boccaccio were to be believed, even visited England. His studies did not prevent him from discharging the public duties of a citizen. He fought in the successful battle with the Aretines at Campaldino 1289, and was present at the taking of the fortress of Caprona 1290. What civil offices he first held, is not known, but it is certain that he was sent on several embassies, and at last, 1300, rose to the highest dignity of the city, being chosen one of the Priori for two months, an office which was the source of his subsequent unhappy fortunes. Florence, on the whole, belonged to the party of the Guelphs (q. v.), but was divided into the two factions of the Neri and Bianchi (the *blacks* and *whites*). The Neri were the unconditional adherents of the pope, and this of course gave to the other faction a more Ghibelline leaning: See GUELPHS and GHIBELLINES. A tumult in the city, occasioned by the heads of the ultra-Guelphic or *black* party, caused their temporary expulsion from Florence. They hurried to Rome, to lay their complaints before the Pope. D., who belonged to the Bianchi, was sent by his party to Rome, to counteract their machinations; but Boniface VIII., in concert with the Neri, induced Charles of Valois, brother of Philip IV. of France, to come to Florence and restore peace under the title of peacemaker. This explains the deadly enmity of D. to Boniface. The peace established by Charles of Valois consisted in recalling the banished leaders of the Neri, in giving up the houses and property of the Bianchi to be plundered, and banishing many of them, and among others Dante. D. never entered his native city again, and his whole subsequent life was unsettled, spent in various places, and under various protectors, at Arezzo, Verona, Padua, etc. In 1304, the Bianchi made a final attempt to return to Florence by force of arms, which failed; and probably on this occasion it was that D. went to Paris. The march of Henry VII. to Rome 1310 recalled D to Italy, and he endeavored,

by addressing ardent letters to the Italian princes, to promote the cause of the empire, which had now become his own. It was probably with this view and at this time, that his work *De Monarchia* was written. The unsuccessful siege of Florence, and the death of the emperor, which followed in 1313, annihilated the last hopes of D., and he spent the closing years of his life at Ravenna, under the protection of Guido Novello da Polenta. He went on a mission for this prince to Venice, returned sick and died

As it is often with distinguished men, an incident in D.'s early youth had made an indelible impression on the soul of the poet, and, as he himself expresses it, awakened in him a 'new life.' At a family festivity, he had seen Beatrice Portinari, then eight years old, daughter of a rich citizen, and the love that sprang up in the heart of the nine years' old boy became the fountain of the poetical inspiration of his life. How pure, chaste, and tender his love was, is testified by the *Vita Nuova*, his first work, which appeared about 1300. It is a collection of poems or canzoni, bearing upon this youthful love, and with each piece is given a history of its origin and a minute analysis. The best edition of this collection is that prepared by the Marquis Trivulzio (Mil. 1827). Beatrice married a nobleman, Simone Bardi, and died young about 1290. D. himself afterward married a lady named Gemma, of the powerful house of Donati.

His immortal work, the *Divina Commedia*, depicts a vision, in which the poet is conducted first by Virgil, representative of human reason, through hell and purgatory; and then by Beatrice, representative of celestial revelation; and finally by St. Bernard, through the several heavens, where he beholds the triune God. The name *Commedia* was given to the work by the poet himself—because, beginning with the horrible, it ends cheerfully; and because, in respect of style, it is lowly, being written in the vulgar tongue. The epithet *Divina* was added by the admiration of after-times. Hell is represented in the poem as a funnel-shaped hollow, formed of gradually contracting circles, the lowest and narrowest of which is at the earth's centre. Purgatory is a mountain rising solitary from the ocean on the side of the earth opposite to us; it is divided into terraces, and its top is the terrestrial paradise, the first abode of man. From this, the poet ascends through the seven planetary heavens, the heaven of the fixed stars, and the *primum mobile*, to the empyrean, or fixed seat of God. In all parts of the regions thus traversed, there arise conversations with noted personages, for the most part recently deceased. At one time, the reader is filled with the deepest sorrow; at another, with horror and aversion; or the deepest questions of the then philosophy and theology are discussed and solved; and the social and moral condition of Italy, with the corruptions of church and state, are depicted with a noble indignation.

Fifty-two years after the poet's death, the republic of Florence, at the instigation of Boccaccio, set apart an annual sum for public lectures to explain the *Divine Comedy* to the people in one of the churches, and Boccaccio him-

self was appointed first lecturer. The example was imitated in several other places of Italy. The works of these men are among the earliest extant commentaries on D. The number of editions of the work amounts by this time to about 300. Only a few, in addition to the commentaries above mentioned, deserve notice. They are: that printed at Fuligno in 1472—earliest of all; the Nidobeatine edition at Milan (1478); the first Aldine edition (1502); the first Cruscan edition (1695); that of Volpi (1727); of Venturi (1732); of Lombardi (1791), and with additions and illustrations in 1815–21, and 22; of Dionisi (1795); of Ugo Foscolo (Lond. 1842–3). A reprint of the Fuligno edition above mentioned, together with those printed at Jesi (1472), at Mantua (1472), and at Naples by Francisco del Tuppo (about 1478), appeared at London 1858, under the superintendence of Sir Antonio Panizzi, and at the expense of Lord Vernon.

The *Divina Commedia* has been translated into almost all European languages. Two translations of the whole into Latin have been printed, one by Carlo d'Aquino (1728), and lately by Piazza (1848). In French, there are a number of translations both in prose and in verse. The earliest, by Grangier, 1596, is still nearest the original in form, but none is good. The German translations are numerous, and such as no other modern language can equal in faithfulness. Kannegiesser has translated the whole in the measure and rhyme of the original (4th ed. Leip. 1843); King John of Saxony's translation is said by some to be the best. The chief English translations are Boyd's (1785) and Cary's (1814), in blank verse (see *Chandos Classics* London, Warne & Co); Wright's (1833) in triple rhymes; Cayley's in the original ternary rhyme (the *Inferno*, 1851, the *Purgatory*, 1853, the *Paradiso* 1854, with notes 1855); Dr. John Carlyle's, the *Inferno* in prose, with commentary (1849); Fred. Pollock's in blank verse (1854); Henry W. Longfellow's (1867) in blank verse, with D.'s ternary arrangement of lines. D. wrote other works.

DANTON, *dăn'ton*, Fr. *dŏng-tōng'*, Georges-Jacques: 1759, Oct. 28—1794, Apr. 5; b. at Arcis-sur-Aube, France. At the outbreak of the French Revolution, he was practicing as an advocate in Paris, but was in low repute for dissolute habits. The fierce, half-savage nature of the man, however, immediately found a fitting sphere for its action in the chaos into which France then fell. Mirabeau quickly detected his genius, and hastened to attach D. to himself. President of the district of the Cordeliers, D. ruled it at his will. With Marat and Camille Desmoulins, he instituted the Cordeliers' Club (see Cordeliers), an exaggerated copy of that of the Jacobins. It soon became the rallying-point of all the hotter revolutionists. There the tall brawny man, with harsh and daring countenance, terrible black brows, and a voice of enormous power, thundered against the aristocrats, till the passions of the populace rose into ungovernable fury. It was not, however, till after the flight of Louis that the political *rôle* of D. commenced. 1791, July 17, he and others assembled

tne people of Paris in the Champ-de-Mars, and goaded them on by furious declamation to sign a petition for the deposition of the king. Some time afterward be became *procureur-substitut* for the city of Paris. The court, which found that it could not frighten D., now attempted to bribe him. It is not certain that he proved venal, but the evidence undoubtedly leaves a strong suspicion of his venality. Be that as it may, he soon broke off his secret intercourse with the royalist agents, and became more the implacable enemy of the monarchy than before. It was D. who excited to action the wild sanguinary rabble that, 1792, Aug. 10, stormed the Tuileries, and butchered the faithful Swiss. The reward of his fatal eloquence was the officer of minister of justice, and here the gigantic personality of the man seemed to overshadow all the surrounding figures. He stood forth as the incarnate spirit of the Revolution, manifesting alike its heroic audacity in the presence of danger from without, and its maniacal terror in the presence of danger from within. The advance of the Prussians seemed for a moment to inspire France with a panic. On Sep. 2, D. mounted the tribune, and addressed the legislative assembly in a speech of tremendous power, probably the most effective during the whole Revolution. It closed with these words regarding the enemies of France: *Pour les vaincre, pour les atterrer, que faut-il? De l'audace, encore de l'audace et toujours de l'audace.* France quivered to its core with enthusiasm. 'In a few weeks, 14 republican armies stood upon the field of battle, and repelled with unexampled bravery the aggressions of the allied forces.' But unhappily that 'audacity,' by which alone D. thought it possible for France to save herself, required for its perfection the immolation of the imprisoned royalists. On the very evening when D. spoke, the frightful September Massacres began. D. publicly thanked the assassins, 'not as the minister of justice, but as the minister of the Revolution.' Elected by the city of Paris one of its deputies to the national convention, he resigned his judicial function, and zealously hurried on the trial of the king. As a proof of his ferocious decision of character when pressed by difficulties, it is recorded that one of his friends having pointed out that the convention could not *legally* try the king, 'You are right,' instantly replied Danton. 'So. we will not try him; *we will kill him!*' In the mean time, D. was sent on a mission to the army of the north, commanded by Dumourier, with whom he was soon on close terms of intimacy—too much so, indeed, for the suspicious soul of his old friend Marat. The defection of Dumourier was the signal for Marat to give vent to his suspicions. It therefore became necessary for D. to throw himself again into the van of the revolutionary movement. 1793, Mar. 10, he established the 'extraordinary criminal tribunal,' which was at liberty to make what arrests it pleased, and from whose deadly decisions there was no appeal. He also became pres. of the 'Committee of Public Safety.' D. now set himself to crush the Girondists, or moderate party, alleging, with

singular candor, that 'in a revolution the authority ought to belong to the greatest scoundrels.' In this he was supported by Robespierre, now gliding into power swiftly and silently like a serpent. After he had effected his purpose, however, a species of remorse seems to have seized him. He objected to the institution of the guillotine. This trait of moderation lost him the favor of the Jacobins or Mountain party, whose murderous instincts led them to select Robespierre as a chief, on the permanence of whose cruelty more reliance might be placed. Several other indications of returning humanity lessened his influence still more, and at the close of 1793, D. felt that a crisis was approaching. A fruitless attempt was made to reconcile Robespierre and him. They had an interview, but parted on worse terms than ever. It was now a struggle for life between them; but D., sick of the Revolution, and conscious that it was rapidly becoming a *sham* (a thing which D., with all his faults, could not abide), gave himself up to a sort of reckless apathy, which enabled the sleepless Robespierre to ruin him. His friends endeavored to rouse him. 'I would rather be guillotinod than guillotine,' he answered. Blinded by the consciousness of his own inherent power, he also declared that his enemies 'would not dare' to lift their finger against him. But men of the stamp of Robespierre—though essentially cowards, and incapable of facing danger with honest straightforwardness—have a certain furtive audacity that emboldens them to attack a greater than themselves, if circumstances are favorable. So Robespierre sprang at D., and so the great anarch perished. On the night of 1794, Mar. 30, he was arrested, and brought before that Revolutionary Tribunal which he himself had established, summarily condemned, and, with Camille Desmoulins and others, was guillotined six days later. He predicted the fate of Robespierre, calling him 'an infamous poltroon,' and immediately added, 'I was the only person who could have saved him.' D. was an atheist—not a calm, thoughtful, dispassionate disbeliever in the existence of God, but one who, by his own vices, and the general godlessness of the times in which he lived, had been robbed of the spirit and power of faith in the Unseen. When formally interrogated regarding his name and dwelling, he replied: 'My dwelling-place will soon be annihilation, and my name will live in the Pantheon of history.'

DANT'ZIG: see DANZIG.

DANUBE, *dăn'ūb* (Ger. *Donau*): second of European rivers, inferior only to the Volga. It has its origin in the Brege and Brigach, two mountain-streams rising in the e. part of the Black Forest, in Baden, 2,850 ft. above sea-level; in lat. 48° 6′ n., and in long. 8° 9′ e. The total length of the D. is about 1,750 m.; the area which it drains is estimated at 250,000 sq. m., comprising countries widely varying in climate and productions. The average fall of the D. is 18 inches per mile. At Ulm, it attains a breadth of 108 ft., and before its junction with the Sereth the mean

breadth is 6,000 ft., and the depth, Ulm, 6 ft., and at Passau 16, is here on an average 20 ft. The D. is joined in its course by 60 navigable rivers, and falls into the Black Sea, pouring into it a volume of water nearly equal to that of all the other rivers that empty themselves there. From its source, it flows n.-easterly through Würtemberg and Bavaria. Passing Ulm, at which point the river becomes navigable for vessels of 100 tons, it receives from the s. the Lech and the Iser, with some unimportant streams from the n.; flows rapidly past Ingolstadt, and onward to Regensburg (Ratisbon); then suddenly altering its course, it proceeds s.-easterly, passing Straubing and Passau, where it enters the Austrian dominions. With little variation of course, the D. flows e. from Passau to Presburg, receiving from the s. the Inn and the Ens, and from the n. the March or Morava, through a tract of country rich in minerals, well peopled, and highly cultivated. Near Linz, and also in the picturesque neighborhood of Vienna, the waters of the D. frequently divide, and inclose large tracts of soil, forming islands, among which are the Great and Little Schütt, called also the Golden Gardens. Hurrying past Presburg, the D. alters its course to s.e., and such is its velocity here, that barges can navigate it only downward. Passing Pesth, and flowing directly s., it enters upon the Hungarian plain, a vast sandy and alluvial flat, in which it is continually forcing new channels and silting up old ones, sometimes sweeping away towns, or capriciously removing its waters to a distance of several miles from such as were formerly built upon its banks. Here it receives from the n. the Waag and the Gran, while the Drave from the w. adds considerably to its volume. After this accession, the river turns toward the e., and joined by the waters of the Theiss and Temes from the n. sweeps past Belgrade, forming the boundary between Servia and Hungary. Still flowing e., the D., leaving Orsova, passes the famous Iron Gate, a broad plateau of rock 1,400 yards wide, over which the water formerly rushed with an overpowering noise. This rapid, which was followed by a series of whirlpools, eddies, and shallow falls, formed an effectual bar to the upward progress of vessels, no craft drawing more than $2\frac{1}{2}$ ft. of water being able to pass it. In 1847–49, the obstruction formed by the Iron Gate was to some extent removed by blasting, so that now vessels of eight, and even nine ft. draught, can pass at certain seasons of the year, though the majority of vessels engaged on this part of the river draw no more than four ft. of water. A few miles further on, it enters a plain, and proceeding uninterruptedly, forms the boundary between Walachia and Bulgaria. From the Carpathians it receives the Schyl and the Aluta, and from Mount Balkan the Morava. Increased by these rivers and by numberless streams, it flows through a district fertile indeed, but badly cultivated and thinly peopled, occasionally broadening like a sea, as at Hirsova, and encircling many islands. After being joined by the Sereth and the Pruth from the n., and after dividing into several branches forming del-

toid islands, it flows e. into the Black sea. The principal mouth is the Sulina, by which the greater number of ships enter. The Danube, which is the chief natural highway for European commerce, is, throughout the greater part of its course, surrounded by picturesque and impressive scenery—at one time flanked with lofty mountains, again having on each side, dense and far extending forests At the peace of Paris, 1856, the navigation of the Danube was declared free to all nations, and its management was intrusted to two commissions, one representing the European powers, another named by the states on the banks of the river. At the Berlin Congress, 1878, it was stipulated that no ships of war should navigate the Danube below the Iron Gates.

DANUBIAN, a. *dăn-ū'bĭ-ăn:* pertaining to the river *Danube.*

DANU'BIAN PRINCIPALITIES: name applied to Moldavia and Wallachia: see ROUMANIA.

DANVERS, MASS., town in Essex County, on the Boston & Maine Railroad, five miles northwest of Salem. It was a portion of Salem till 1756, and the Salem village parish where the witchcraft excitement broke out is included in the present Danvers. It is the seat of Peabody Institute, founded by George Peabody, a resident of the place, who in 1852 donated $200,000 for the promotion of knowledge and morality among the inhabitants. It is also the seat of Danvers Insane Asylum, built at the cost of $2,000,000, and has extensive manufactures of shoes, bricks, and carpets, and has foundries, rolling mills, tanneries, churches, high school, weekly newspapers, public library, a national bank, and good public and private schools. Pop. 9,407.

DANVILLE, ILL., city, county-seat of Vermilion County; on the Vermilion River, and the Wabash, Chicago, and Eastern Illinois, and the Cleveland, Cincinnati, Chicago & St. Louis railroads; 125 miles south of Chicago. It has a National Soldier's Home for disabled veterans, with over 3,500 inmates. Its chief industry is coal mining, which is carried on extensively on the bluffs of the river. It also has large railroad car and machine shops, iron foundries, planing-mills, carriage and wagon factories, organ and furniture factories as well as churches, a high school, three national banks, daily and weekly newspapers. Pop. (1900) 16,354; (1910) 27,871.

DANVILLE, IND., county-seat of Hendricks County; situated on the Cleveland, Cincinnati, Chicago & St. Louis Railroad, about 20 miles west of Indianapolis. The manufacture of flour and lumbering are the principal industries. It is the site of the Central Normal College, a private institution. Pop. 2,000.

DANVILLE, KY., city, county-seat of Boyle County; on Dick's River, and the Cincinnati Southern Railroad, 42 miles south of Frankfort. It is a stockraising centre, and the seat of several educational institutions among them the Danville Theological Seminary, the Southern

Collegiate Institute, Center College, the Caldwell Female Institute, and also the State Asylum and School for Deaf-mutes. It has churches, public schools, three national banks and weekly newspapers. Pop. (1910) 5,420.

DANVILLE, Pa., a borough and county-seat of Montour County; on the Susquehanna River; and on the Pennsylvania, the Lackawanna, and the Philadelphia & Reading railroads; 154 miles northwest of Philadelphia. Danville is in a district abounding with iron ore, limestone, and anthracite coal; and contains the first establishment erected in the United States for the manufacture of railroad iron. It still ranks among the most extensive iron manufacturing places in the country. There are blast furnaces, iron foundries, rolling-mills, churches, two national banks, the Danville Institute, a State Asylum for the insane, and daily and weekly newspapers. Pop. (1910) 7,517.

DANVILLE, Va., city and county-seat of Pittsylvania County, on the Dan River, 140 miles southeast of Richmond, on the Danville & Western and the Southern R.R.'s. One of the oldest cities in the South; incorporated as a town in 1792. For a short time during the last days of the Southern Confederacy it was the seat of government. It is located in the famous and picturesque Piedmont section of Virginia, on a gradual slope extending from the river to an altitude of 600 feet above the sea. The river furnishes power for the cotton-mills, flour-mills, foundry, ice factory, and electric-light plant; and further development of its water power is now being made about three miles up the river, at an estimated cost of $2,000,000. Danville is the largest loose tobaco market in the world, her average annual sales being 50,000,000 pounds. The surrounding country is well adapted to grain, fruits, and tobacco. The improvements in public utilities within the past three years include larger water mains in the down-town district (16 inch), and additional fire engines (not including further improvements now under consideration) at a cost of $23,000; Main street repaved with Belgian block and Mack brick, $100,000; Craghead street, same material, $24,500, and several other less important streets paved with cobble. Further extension of the sewerage system from time to time as the growth of the city requires; new electric-light plant owned by city, with new $5,000 incandescent machine, furnishing lights for streets, business, and dwelling-houses; electric railway system rebuilt at a cost of about $320,000, first-class equipment, double track on Main street, about eight miles of track, new power-house, with double set of dynamos and engines. The Southern Bell Telephone and Telegraph Company has expended about $30,000 in improvements, and the growth of their business has been such as to require a much larger additional switchboard, which was installed recently. Danville is the seat of Roanoke Female College (Baptist), established 1859, Randolph Macon Institute for Young Ladies (Methodist), founded in 1883, and Danville Mil-

itary Institute, established in 1890. The climate of the city is mild and pleasing, the streets well shaded and paved, and as a residential city it is excelled by few locations in the South. There are many new public buildings, churches, and schools; a general hospital recently enlarged and fitted with the latest improvements, seven banks—one national, five State, and one private, and two daily newspapers. Under the new constitution of the State the municipal government is administered by a mayor, elected quadrennially, and a city council, composed of two branches having different numbers, which controls appointments to most of the administrative offices. The water works, electric light and gas plants are owned and operated by the municipality. Pop. (1890) 10,303; (1900) 16,529; (1910) 19,020.

DANZIG, *dânt'sĭch* (Polish *Gdansk*): important seaport of Prussia, and fortress of the first rank, in the province of Prussia; on the left bank of the w. branch of the Vistula about 3½ m. from its mouth in the Baltic. Danzig is an ancient place, in existence at least as early as the 10th c., and its possession was long an object of ambition to the Danes, Swedes, Pomeranians, and Teutonic knights, the last of whom obtained, and held it for a considerable period. In 1454, it became a free city under Poland, and remained so until 1793, when it fell under the dominion of Prussia, in whose hands, except 1807–14, when it existed as a separate dukedom under Napoleonic rule, it has since continued. Danzig is surrounded by ramparts and wet ditches, and is otherwise strongly fortified, and the garrison possesses the means of laying the surrounding country under water on three sides. The city is traversed by the Motlau and Radaune, tributaries of the Vistula, the former of which is deep enough to admit vessels of eight or nine ft. draught up to the town. The principal port, however, is at Neufahrwasser, at the mouth of the Vistula, which river cannot be entered by large vessels on account of the sand-bars across it. Many of the streets of Danzig are narrow and crooked, but the principal street intersecting it from e. to w., abounds in fine specimens of antique architecture, and has altogether a most picturesque appearance. Among most noteworthy buildings are the cathedral, a fine structure, commenced 1343, but not finished until 1503, and possessed of a noble and widely celebrated picture of the *Last Judgment* (the painter of which is unknown), the Church of St. Catharine, Trinity Church, the fine old Town-hall (which has lately been restored at a cost of 60,000 thalers), the Exchange, etc. Danzig was a prominent member of the Hanseatic League, and is still one of the chief commercial cities of n. Europe. To provide for its immense trade in grain, it has enormous granaries, capable of containing 500,000 quarters of corn, and built on an island forming one of the parts of the town where, in order to prevent fire, no person is permitted to live, nor lights allowed. Beside grain and timber, there are minor articles of export, as black beer, amber, spirits,

etc. The annual value of the exports is about $15,000,000; of the imports about twice as much. Pop. (1900) 140,539.

DAP, v. *dăp* [from Dip]: in *angling*, to drop the bait gently into the water, or to raise it. Dap'ping, imp. Dapped, pp. *dăpt*.

DAPEDIUM, n. *dăp-ĕd'ĭ-ŭm*, or Daped'ius, *-ŭs* [Gr. *dapidion*, dim. from *dapedon*, the floor of a chamber]: genus of fossil fishes, family *Dapedidæ*. They are peculiar to the Lias. The arrangement of the scales resembles a tesselated pavement.

DAPHNE, *dăf'nē* [from the fabled nymph *Daphne*]: magnificent grove and sanctuary in ancient times, near Antioch (q.v.). The grove was finally laid out in walks of cypress and bay trees, and as the chief resort of all the dissolute persons in the city, became the scene of the greatest debauchery. In the centre, surrounded by the luxuries of nature and art, glorious gardens, fountains, baths, colonnades, stood the temple of Apollo and Diana, invested with the privileges of an asylum, and for centuries a place of heathen pilgrimage. The progress of Christianity gradually revived in the Antiochenes the purer instincts of virtue and decorum, and the grove was finally abandoned. Julian the Apostate, in his vain endeavor to resuscitate the corpse of paganism, visited Daphne, and made the altars of the temple smoke once more with incense; but on his departure they were again neglected, until one night the altars and the statues were discovered to be in flames. They were consumed to ashes; and so perished for ever the gods of Daphne.

Daphne owed its origin to Seleucus Nicator. He planted the grove, built the temple, and gave the place a mythological history in connection with the river Peneus and the nymph Daphne, fabled to have been turned here into a laurel or bay tree, whence the grove received its name. Modern travellers are not agreed as to its site. Pococke and Richter decide in favor of *Beit-el-Maa*, about 5 m. from Antioch; while Forbiger and Kinneir consider Babylas the true position.

DAPHNE, n. *dăf'nē* [Gr. and L., the daughter of the river-god Peneus, changed into a laurel-tree]: genus of plants of the nat. ord. *Thymeleaceæ*, having a 4-cleft funnel-shaped perianth, the throat of which is destitute of scales, eight stamens, and a one-seeded succulent fruit. All the species are shrubs or small trees, some having deciduous, and some evergreen leaves, all of them possessing in all their parts more or less acridity, which in some is so great that they are even caustic; and the berries are poisonous to all animals except birds, while the flowers of some are deliciously fragrant. To this genus belongs the Daphne Mezereon, well known both for the fragrance of its flowers and for its medicinal uses. The Garou bush (*D. gnidium*), native of the south of Europe, less hardy than the *mezereon*, has the same medicinal properties and uses, which is in some measure the case with many other species.

The Spurge Laurel (*D. laurelo*) is an evergreen shrub, 3–4 ft. high, with obovate-lanceolate leaves, which grow in tufts at the end of the branches, and give it a remarkable appearance. It grows well under the shade of trees.—*D. Japonica*, a species recently introduced from Japan, has exquisitely lemon-scented leaves. From the bark of some species of Daphne, and of the most nearly allied genera, paper is made in different parts of the East, particularly *Nepaul paper* from that of *D. cannabina*. Slips of the inner bark are boiled in a lye of wood-ashes for half an hour till quite soft, are then reduced to a homogeneous pulp by beating with a wooden mallet in a mortar, churned with water into a thin paste, and poured through a coarse sieve upon a cloth stretched on a frame. The paper is subsequently polished by friction, with a shell or a piece of hard wood, and is remarkable for toughness, smoothness, and durability. Most of the paper used in Tibet is made from the bark of different species of Daphne and allied genera, particularly of *Edgeworthia Gardneri*, a beautiful shrub, with globes of waxy, cowslip-colored, deliciously fragrant flowers, growing on the Himalaya, at an elevation of 6,000–7,000 ft. The bark of *Dais Madagascariensis* also is made into paper in Madagascar, and that of *Gnidia daphnoides* into ropes.

DAPHNEPHORIA, *dăf-nē-fō′rĭ-â:* festival in honor of Apollo, celebrated at Thebes once in nine years.

DAPH′NIA: see Water-Flea.

DAPH′NIN, or Daphnine: bitter, astringent, crystalline substance present in different species of *Daphne*, and obtained from the bark. It is analogous to asparagine: see Asparagus.

DAPHNIS, *dăf′nĭs:* in Greek mythology, a son of Mercury and of a nymph, who became a shepherd on Mount Ætna, fell in love with Chloë, a naiad who through a suspicion of his lack of fidelity caused blindness to come upon him. In his distress he prayed to his father for relief, and Mercury took him to heaven. He was esteemed a youth of great beauty, and the first to compose pastoral poetry. His story is outlined in the first idyl of Theocritus, Allan Ramsay's *Gentle Shepherd*, and St. Pierre's *Paul and Virginia*.

DAPIFER, n. *dăp′ĭ-fĕr* [L. *dapes*, a feast; *fero*, I bear or carry]: one who carried the meat to the table; a steward, afterward the chief steward or bailiff of any honor or manor.

DA PONTE, Lorenzo, *lō-rĕnd′zō dâ pŏn′tĕ*, Italian dramatist and author: b. Venice, 1749, March 10; d. New York, 1838, Aug. 17. He wrote the libretti for Mozart's operas *Don Giovanni* and *Figaro*. He came to America in 1805, and in 1828 was professor of Italian in Columbia College. He wrote many plays, sonnets, and translations, and published several works of instruction in the Italian language; also his own *Life* (1823); *History of the Florentine Republic and the Medici* (1833).

DAPPER, a. *dăp'pėr* [Dut. *dapper*, active, smart: Low Ger. *dobbers*, sound, good: Ger. *tapfer*, brave]: little and active; nimble; neat; clean-made.

DAPPLE, a. *dăp'l*, or DAPPLED, a. *dăp'ld* [from *dab*, a lump of something soft, a blotch or spot: Icel. *depill*, a spot on ground of a different color]: spotted of various colors; marked with spots; mottled: V. to mark or variegate with spots. DAP'PLING, imp. *-lĭng*. DAP'PLED, pp. *-ld:* ADJ. mottled.

DARAPTI, n. *dä-răp'tī*, or *tī*, (a word without etymological meaning but designed to have its letters symbolic): in logic, the first mode of the third figure of syllogisms. See SYLLOGISM AND MOOD, IN LOGIC.

DARBHANGAH, *dâ-bân'gâ*, India, (1) a district in Bengal. In the rainy season the district becomes inundated by the overflow of the rivers Kamlá and Little Bághmati. Area 3,335 square miles; pop. 2,633,477. (2) A town of the same name is the capital of the district. It is situated in the Little Bághmati, and is the residence of the Maharaja of Darbhangah. The chief exports are oil-seeds and timber. Pop 73,561.

D'ARBLAY, *dar'blā'*, *dâr-blā'*, Madame FRANCES: novelist: 1752, June 13—1840, Jan. 6; b. Lynn-Regis, England; daughter of Dr. Charles Burney, an eminent musician. She received a very limited education, but gained much general and literary information from the distinguished men and women of letters who frequented her father's house in London to listen to his concerts. Her first novel *Evelina* was published anonymously 1778, and had great success. It received the praise of Burke, Gibbon, Johnson, and Sheridan, and when the name of its author was disclosed she found herself at once famous. She brought out *Cecilia* 1782, was appointed second keeper of the robes to Queen Charlotte 1786, married Count D'Arblay, an exiled French officer, 1793, and resided in France 1802–16. She wrote *Camilla* and other works of fiction, and left interesting material for a *Diary and Letters*, 7 vols. (1842–46), She died in Bath, England.

DARBOY, *dar-bwâ'*, GEORGES, Archbishop of Paris: 1813, Jan. 6—1871, May 24; b. Le Fayl-Billot. He was ordained to the Rom. Cath. priesthood 1836; was appointed teacher of philosophy 1839, and theology 1841, in the seminary of Langres; consecrated bp. of Nancy 1859, and elevated to the archiepiscopate of Paris 1863. He attended the Vatican council 1869–70, and first opposed, then acquiesced in the dogma of papal infallibility. During the reign of the communists in Paris, 1871, he was arrested by them as a hostage, and when the govt. troops captured the city, he with five other hostages were shot in the prison of La Roquette, May 24, before the soldiers could rescue them. The communists were deaf to all appeals for mercy towards the hostages, to secure which U. S. minister Washburne exerted all his great influence; and the bullet did its fatal work while the archbishop was in the act of blessing his murderers. He was author of *Holy Women* (1850); *Women*

of the Bible, 2 vols., of which a 5th ed. was published 1859; and a *Life of St. Thomas à Becket,* 2 vols., 2d ed. (1860).

DARBUNG, *dâr-bŭng':* mountain-torrent of Bussahir, Hindustan, with a course of only 27 m. It rises about 15,000 ft. above the sea, lat. 31° 57′ n., and long. 78° 25′ e., and loses itself in the Sutlej, the most easterly of the five rivers of the Punjab, in lat. 31° 43′ n., and long. 78° 35′ e. About 7 m. above the point of confluence—having already descended 6,000 ft. in 20 m.—the D. is crossed by a wooden bridge of 33 ft. in length; and even somewhat further up, it is bordered by several villages. Its source has been described as a scene of terrific desolation, consisting of fields of snow and ice half-hid under stones and rubbish.

DAR'BYITES: see PLYMOUTH BRETHREN.

DARDANELLES, *dâr-da-nĕlz'* (anc. *Hellespont*): narrow channel separating Europe from Asia, and uniting the Sea of Marmora with the Grecian Archipelago. It extends from n.-e. to s.-w., between lat 40°—40° 30′ n., and long. 26° 10′—26° 40′ e; length about 40 m., breadth varying from less than 1 to 4 miles. From the Sea of Marmora, a strong current runs through the straight to the Archipelago. To prevent an attack on Constantinople from the Archipelago, the D. is strongly fortified on both sides, with many guns of immense calibre. A treaty concluded between the five great powers and Turkey in 1841 arranged that no ship of war belonging to any nation save Turkey should pass the D. without the express consent of Turkey; all merchant ships being also required to show their papers to the Ottoman authorities. These provisions were confirmed at London 1871 and at Berlin 1878. The D. is celebrated in ancient history on account of Xerxes and Alexander having crossed it, the former B.C. 480, to enter Europe; and the latter B.C. 334, to enter Asia. The point at which Xerxes crossed, by two separate bridges, was in the neighborhood of Abydos, on the Asiatic shore, opposite Sestos. Alexander crossed at nearly the same place; and here also young Leander nightly swam across to visit Hero—a feat performed in modern times by Lord Byron for 'glory.'

DARDANUS, *dâr'da-nŭs:* in Greek mythology, a son of Jupiter and Electra, who killed his brother Jasius to obtain the kingdom of Etruria, and afterward fled to Asia Minor. He married Batia, daughter of Teucer, King of Teucria, and after the death of his father-in-law ascended the throne and reigned over 60 years. He built the city of Dardania, and was believed to have been the founder of the kingdom of Troy. One of the two statues which he erected to the goddess Minerva became known as the Palladium.

DAR'DEN, MILES: 1798–1857, Jan. 23; b. N. C.: giant. When 41 years old he was so large that his coat could be buttoned around three men of 200 pounds each; and at the age of 47 he had attained a height of 7 ft. 6 in., and a weight of 871 lbs. He was active and able to work till his 58th year, and at his death weighed somewhat over1,000 lbs.

DARE, v. *dâr* [AS. *dearran*, to dare· Scot. *dour*, bold, obstinate: Gael. *dûr*, stubborn: Icel. *diarfr*, bold: L. *durus*, hard: W. *dewr*, strong, bold]: to have courage, strength of mind, or hardihood to undertake anything; not to be afraid; to venture; to provoke; to challenge; to defy: N. in *OE.*, defiance; challenge. DA'RING, imp.: ADJ. bold; fearless; audacious: N. boldness, or a bold act. DARED, pp. *dârd*. DARED, pt. defied. DURST, pt. *dêrst*, ventured. DA'RINGLY, ad. *-li*. DA'RINGNESS, n. boldness; courage. DARE-DEVIL, an audacious reckless fellow: ADJ. fearlessly reckless. DAREFUL, a. *dâr'fûl*, in *OE.*, defiant.—SYN. of 'daring': brave; venturesome; courageous, intrepid; undaunted; valiant; gallant; heroic.

DARE, v. *dâr* [Scot. *daur*, to stun, to be stupefied: Sw. *dare*, a fool: AS. *Thor*, the god of thunder: Low Ger. *bedaren*, to be still and quiet—*lit.*, to lurk or lie close from fear]: to daunt; to terrify; to daze. DA'RING, imp. DARED, pp. *dârd*.

DARE, VIRGINIA: b. 1587, Aug., Roanoke, Va.: first child born of English parents in America: granddaughter of Gov. John White and daughter of one of his official staff. Gov. White's expedition to establish an agricultural colony left Plymouth, England, 1587, Apr., and reached Roanoke Island in July. A few days after her birth her grandfather returned to England, and coming back in the following year was unable to see or learn anything of the colony or the child.

DARFUR, *dâr-fôr'*: a prov. of Africa, e. of Sudan, generally said to be in lat. 10°—16° n., and in long. 22°—28° e.; but its limits are not clearly defined. D. toward the s. is hilly, the principal elevation being a mountainous ridge called Murrah, which traverses the country longitudinally, and is the source of numerous streams. Toward the n. D. is level, sandy, and almost destitute of water. During the rainy season (June—Sep.) it exhibits a rich vegetation. The principal products are wheat, millet, rice, maize, and sesame. Tobacco, which is used by the natives in every form, abounds. Water-melons, also, are abundant during the rainy season. Among the fruits are tamarinds and dates. The minerals are chiefly copper and iron. The wealth of the inhabitants of D. consists chiefly in cattle. Horses, sheep, camels, and game abound. D. has considerable trade with Egypt, Mecca, and the inland countries of Africa; it was formerly a notorious centre of the slave-trade. The Furani are an intelligent, well-built race, and have long been Mohammedans. D. was annexed to Egypt 1874–5, and the country organized into four provinces (Umshanga, Fasher, Dara, and Kakkabia). But in 1884 it was found necessary that Egypt should renounce her hold of D. In 1900 both D. and Kordofan came within the sphere of British influence by treaty between Great Britain, Germany and Italy. Pop. over 3,000,000.

DARGAN, *dâr'gan*, WILLIAM: born about the beginning of the present c. in county Carlow, Ireland, where his father was a large farmer; died 1867, Feb. 7. He received a

good education, and after spending some time in the office of a surveyor, where he acquired a reputation for integrity and industry, he went to England, and was employed under Telford, then constructing the Holyhead Road. D. resolved to carve out a similar path for himself in his own country, and having returned to Ireland, obtained some small 'jobs,' the beginnings of a career which led to splendid success—for he became one of the first capitalists in Ireland. He contracted for the first railway ever executed in Ireland (the Dublin and Kingstown), and he was afterward connected with most of the great undertakings in that country, such as the making of railways, canals, tunnels, and embankments. He was also an extensive holder of railway stock, a steamboat proprietor, flaxgrower, and farmer. He planned the Industrial Exhibition of Dublin (1853), with the view of developing the resources of his country; and as a help toward its realization, placed £20,000 in the hands of a working-committee. This sum was gradually increased to about £100,000. The Exhibition was opened 1853, May 12, by the lord-lieut.; and was visited by the queen and Prince Albert, when the honor of knighthood was offered to D., but was declined. So far as the Industrial Exhibition was a *personal* speculation on the part of D., it was a failure, for he lost, it is said, £20,000 by it; but in every other respect it was highly gratifying to him, and to every genuine lover of his country. D. was an Irish patriot in the genuine sense.

DARGUE, or DARG, n. *dârg* [Scot. *darg* or *daurk* = a daywerk or daywork]: a day's work; a certain quantity of work. DARGER, n. *dâr'gẽr*, a day-laborer.

DAR'IC [from the King Daruis Hystaspes]: a gold coin of ancient Persia, used also in neighboring Asiatic lands, and in Greece; value in gold of the present day. abt. seven dollars.

DARIEN, *dā'rĭ-ĕn* or *dâ-rē-ĕn':* province in the republic of New Granada, corresponding to what is now the state of Panama in Colombia. One of the earliest Spanish settlements on the mainland was in D., the region being then called also by the Spaniards *Castilla de Oro* ('the Golden Castile') and forming the best known part of their *Tierra Firma.* In 1513, the conquistador Balboa, gov. of the Darien settlement, crossed the isthmus with 290 men, and on Sep. 26, first caught sight of the Pacific Ocean. As early as 1528 the idea of a ship canal across the isthmus was entertained; in 1826 a line for such a canal was traced between Panama and Portobello; and between 1843–74 repeated surveys have been made by French, English, and American engineers with the same view. The Inter-oceanic Canal Congress at Paris, 1879, under the auspices of M. Lesseps, approved a route nearly parallel to the railway. A company was formed 1880, under the auspices of M. Lesseps, to make the canal; and operations were commenced 1881: see INTER-OCEANIC SHIP CANAL. For the railway from Aspinwall to Panama, see PANAMA. The principal ports on the n. shore are Chiriqui, Colon or As-

pinwall on Limon Bay, Portobello, San Blas, and Puerto Escoces, on Caledonia Bay.

DARIEN, Gulf of: on the n. coast of S. America, most southerly portion of the Caribbean Sea, about 70 m. in length from n. to s., and 25 from e. to w. The shores are in most places steep, and are in many places fringed with shoals. The southernmost part of the gulf is called the Bay of Choco, into which the considerable river Atrato debouches.

DARIEN, Isthmus of: now usually called Isthmus of Panama (q.v.).

DARIEN SCHEME, The: one of the most disastrous speculations on record, and one which caused unprecedented excitement in Scotland from 1695—in which year the Darien Company was established by act of the Scottish, parliament, sanctioned by royal authority—till 1701, when the last of the disappointed adventurers returned home. The D. S. was projected by William Paterson, founder of the Bank of England. Its object was to plant a colony on the Atlantic side of the Isthmus of Panama, and so form a commercial entrepôt between the eastern and western hemispheres. An entire monopoly of the trade of Asia, Africa, and America, for a term of 31 years, was granted to the company. At that time, the foreign trade of Scotland had been ruined by the English navigation act of 1660, which provided that all trade with the English colonies should be conducted in English ships alone, so that when Paterson opened his subscription-list, the nobility, the gentry, the merchants, and people, royal burghs, and public bodies in Scotland all hastened to subscribe. £400,000 were immediately put down on paper, of which £220,000 were actually paid up. Deputies in England received subscriptions to the amount of £300,000: and the Dutch and Hamburgers subscribed £200,000. The English parliament, however, actuated by a feeling of national antipathy, and the jealous clamors of trading corporations, gave its unequivocal condemnation to the scheme. The British resident at Hamburg, probably with the concurrenee of the king (William III.), also made various insinuations against it. The result of this interference was the almost total withdrawal of the Dutch and English subscriptions. It must now be admitted, even by a Scotsman, that there *was* one fatal objection to the scheme—viz., the danger of settling on ground claimed by Spain, without coming to a proper understanding with that country beforehand. Unable, however, to see any sort of obstacles, incited by the vehement eloquence of Paterson, and dazzled by the magnificent proportions of the scheme, the Scotch hurried forward their arrangements. Five ships, with 1,200 men on board, set sail from Leith for Panama 1698, July, 25. They reached their destination in four months, and having bargained with the natives for a country which they called New Caledonia, the colonists fixed the site of what was to be their capital city, New Edinburgh, and built a fort in its vicinity, whic

they named New St. Andrews. Having thus constituted their colony, they issued a proclamation of perfect freedom of trade, and universal toleration in religious matters to all who should join them. According to the act which established their company, all goods imported by them, with the exception of foreign sugar and tobacco, were free from all duties and impositions for 21 years; and thus, on the whole, they seemed for the first few months to be on the highway to success. But the climate, tolerable in winter, became unbearable in summer, and many sickened under it; their supplies also failed before they could derive a return from the soil; and on sending to the British colonies in America for provisions, they learned with the deepest indignation and despair that the British American colonies, having been informed that King William had not given his sanction to the expedition, had resolved to hold no intercourse with the new colony at Panama.

Sickly and desponding, they waited long for supplies from the mother-country; but the company at home were not aware of their wretched condition, and none came. At length, having waited eight months for assistance, the colony broke up. In the mean time, 1,300 colonists, including 300 Highlanders from the estate of Captain Campbell of Finab, who had charge of the expedition, had set sail from Scotland, but ere they arrived, the pioneers had fled. A Spanish force of 1,500 men, and a squadron of 11 ships, immediately threatened the newcomers. Captain Campbell marched by night with a body of 200 men upon the Spanish camp, which he broke, and

Scottish India House.

completely dispersed. On returning to the fort, however, he found it invested by the Spanish squadron. The ammunition of the colonists had now become exhausted, and they were obliged to capitulate, the Spaniards granting honorable terms to all except Captain Campbell, who,

however, escaped, and reaching New York, obtained passage to Scotland. The remainder of the colonists, too weak to weigh the anchor of the vessel which was to carry them home, had to be assisted in their departure by the Spaniards. Not more than 30, among whom was Paterson, who was rendered for a time a lunatic by his dreadful misfortunes, ever reached Scotland. Of Paterson, who has been regarded by some writers as a swindler, Lord Macaulay, in his fifth volume of the *History of England*, says; 'There is not the least reason to believe that he was dishonest. Indeed, he would have found more difficulty in deceiving others, had he not begun by deceiving himself. His faith in his own schemes was strong even to martyrdom; and the eloquence with which he illustrated and defended them had all the charm of sincerity and enthusiasm.'

In Edinburgh, as the head-quarters of the Darien Scheme, a building was erected to accommodate the officials, and carry on the business of the company. Known as the Scottish India House, this building, now removed, recently existed in connection with the establishment for the poor of the city—a melancholy memorial of a disconcerted national enterprise. The books and other documents which had belonged to the company are in the Advocates' Library, where they are shown as a curiosity. The most complete account of the Darien Scheme is that by J. H. Burton, printed by the Bannatyne Club.

DARII, n. *dā′-rĭ-ī*, or *dă′-rĭ-ē* (a word without etymological meaning but designed to have its letters symbolic): in logic the third mode of the first figure of syllogisms. See SYLLOGISM AND MOOD IN LOGIC.

DA RIMINI, *dâ rē′mē-nē*, FRANCESCA: daughter of Guido de Polenta, lord of Ravenna, who to strengthen his house politically, after a series of wars, gave her in marriage to Lanciotto Malatesia, eldest son and heir of the lord of Rimini, though the maiden and her father much preferred the younger, handsomer, and more refined brother Paolo. After the marriage Francesca fell in love with Paolo and began to loathe her husband, who suspecting her infidelity, avenged himself by stabbing both to death in his bed chamber. Her story has been told by Dante in *The Inferno*, Leigh Hunt in a poem, Silvio Pellico in a tragedy, and others in various forms

DARIOLE, n. *dăr′ĭ-ōl:* a cream-cake.

DARIUS, or DAREIUS, *da-rī′us*, I., King of Persia: d. B.C. 485. (Darius was the name of several Persian kings; and like the Egyptian word Pharaoh, was *titular* and not *personal*.) Darius who was son of Hystaspes, a Persian noble, leagued himself with six other nobles to murder Smerdis, the Magian, who had usurped the throne on the death of Cambyses. The conspirators, successful in their plot, having after some discussion fixed on the monarchical as the proper form of government, Darius contrived to be elected king, B.C. 521. His position at first was very insecure, but

his caution, skill, and energy enabled him to govern his vast dominions for 36 years. To strengthen himself, he married the daughter of Otanes, who had been the head of the conspiracy, and likewise took three wives from the royal house—viz., two daughters of Cyrus, and one of Cyrus's son, Smerdis. He then divided his empire into 20 satrapies, and determined the exact amount of taxation to be borne by each. In some of the remoter provinces, great confusion seems to have prevailed after the death of Smerdis, the Magian; and a proof of how little D. could effect at first is afforded by the conduct of Orœtas, gov. of Sardis, who for some time was quite defiant of his authority. Babylon next revolted, and D. besieged the city unsuccessfully for two years. At last, however, it was taken by an extraordinary stratagem of his general Zopyrus, 516. In 513, D., with an army of 700,000, crossed the Bosporus by a bridge of boats, marched through what is now known as European Turkey to the mouths of the Danube, crossed, and advanced against the Scythians. The expedition proved a failure. D. retreated, but detached from his main force an army of 80,000 men under Megabyzus, to conquer Thrace, while he himself returned to Persia, where he extended his authority in the east as far as the Indus. The assistance given by the Athenians and Eretrians to the Ionic states, when they ventured to throw off the Persian yoke, and the part which they took in the burning of Sardis, determined D., who was influenced thereto also by the banished Hippias, to attempt the subjugation of the whole of Greece. In 495, he sent Mardonius with an army into Thrace and Macedonia, and at the same time dispatched a fleet against the islands. The former was routed by the Brygi in Thrace, the latter was shattered and dispersed by a storm when rounding the promontory of Mount Athos. In 490, he renewed his attempt. His fleet committed great ravages in the Cyclades, but his army was entirely defeated at Marathon by the Athenians, under Miltiades, the 'tyrant' of the Chersonese. In the midst of his preparations for a third expedition, D. died.

DARIUS II., called, before his accession to the throne, *Ochos*, and after his succession, *Nothos* ('the Bastard'): d. B.C. 405–4: one of the 17 bastard sons of Artaxerxes I., Longimanus. When Sogdianus, another of the bastards, had murdered the rightful king, Xerxes II., and assumed the royal power, Ochos declared war against him, slew him, and secured the diadem for himself, B.C. 424–423. He now called himself *Darius*. His reign was ignoble. He was completely under the control of his eunuchs and his cruel step-sister and spouse Parysatis. Rebellions were constantly breaking out among his satraps, all of which, however, were crushed except that of Amyrtæus, satrap of Egypt, who made himself independent, 414. It was during the life of D., and chiefly through the craft of Tissaphernes, satrap of Asia Minor, and of his successor, Cyrus the Younger, son of the king, that the Persians exercised so great an influence over the affairs of Greece in the last years of the Peloponnesian war.

DARIUS III., King of Persia (called, before his accession, *Codomannus*), great grandson of D. II: raised to the throne through the help of Bagoas, after the murder of Arses, B.C. 336. He was noted for his mild disposition, handsome person, and courageous spirit. But in spite of his superior qualities, he could offer no solid opposition to the advance of the Macedonians. At the battle of the Issus, 333, his mother, wife, and three children fell into the hands of Alexander; the victory of Gaugamela, 331, opened to the latter the way to Susa and Persia Proper. D. now fled to Ecbatana, in Media; and, on the approach of his opponent, fled to the n. provinces, where he was seized by Bessus, satrap of Bactria. Alexander, in a fit of generosity, hurried to deliver Darius. Bessus then prepared for flight, but D. refusing to follow, was stabbed by the barbarian, and left. The scouts of Alexander's cavalry found D. dying, and administered to his last necessities. Thanking the Grecian king for his magnanimity, and commending his family to his care, he expired (330). Alexander sent the dead body to Sisygambis, mother of D., to be interred in the tomb of the Persian kings. With him, the Persian empire, that had so long overshadowed Asia, came to a close.

DARJEELING, *dâr-jēl'ĭng:* sanitary station of British India, cap. of a dist. in the Sikkim Himalaya; 7,400 ft. above the sea, on a narrow ridge between deep valleys. The lieut.-gov. of Bengal spends some months here in summer. Forest-covered mountains rise above it, where the rhododendrons of the Himalaya grow in great luxuriance. It commands a magnificent view of the snowy ranges of the Himalaya to the n. and w. Notwithstanding frequent heavy rains, and a very great annual rainfall, the climate is very salubrious. It was obtained by the British government from the Rajah of Sikkim, 1835. Tea culture has been extensively introduced.

DARK, a. *dârk* [AS. *deorc;* Icel. *dökkr;* Gael. *dorch*, dark]: without light; obscure; gloomy; disheartening; opposite to *white;* secret; concealed; applied to a black or swarthy complexion, as opposed to *fair;* vile, as a dark deed. DARK, or DARKNESS, n. absence of light; obscurity; ignorance, or state of ignorance; secrecy. DARK'LY, ad. *-lĭ*, in a dark manner; obscurely. DARK'ISH, a. somewhat dark. DARK-BROWED, stern of aspect; frowning. DARK-COLORED, having a dark hue. DARK-HORSE, a competitor in a contest of any kind, about whose abilities or prowess nothing is certainly known. DARK-LANTERN, a lantern having a circular shade, which may be suddenly used to close the aperture and hide the light. DARK'SOME, a. *-sŭm*, rather dark; obscure. DARKEN, v. *dârk'n*, to deprive of light; to obscure; to render gloomy; to render ignorant or stupid; to render less white; to tan; to grow dark. DARKENING, imp. *dârk'nĭng*. DARKENED, pp. *dârk'ĕnd*. DARK'LING, a. *-lĭng*, in the dark; without light. DARK AGES, an indefinite period, loosely applied to the period extending from the death of Charlemagne, A.D. 814, to the re-

vival of letters about A. D. 1460; also applied to the period from about A. D. 600 to 1000.—SYN. of 'dark, a.': dim; ignorant; opaque; mysterious; hidden; vile; wicked;—of 'darken': to obscure; cloud; perplex; foul; sully.

DARK AGES: indefinite period between the fall of the Roman empire, in the latter part of the 5th c., and the revival of letters in the 13th c. The Middle Ages covered the same period with the addition of the time before the Reformation, somewhat before the middle of the 16th c. See MIDDLE AGES.

DARK DAY, IN NEW ENGLAND: phenomenon of 1780, May 19, extending from Me. into N. Y. and N. J., but most intense in Mass. and the lower portion of N. H. It lasted from 10 o'clock A.M. till midnight, and during its prevalence it was impossible to read ordinary print; candles had to be lighted within doors, and animals mistaking the hour went to sleep. A number of similar but less intense phenomena have been observed in England, Canada, and the United States; and scientists have tried to account for them by alleging the obscuration of the light of the sun by smoke from vast burning forests, volcanic exhalations of smoke and ashes, the escape through crust fissures of vapors generated by the internal heat of the earth, smoke caused by the combustion of meteors, cosmical dust from the regions of outer space, and dust raised in clouds from deserts and moved great distances by atmospheric currents. Prof. F. A. P. Barnard dissented from these theories and ascribed the phenomenon simply to the presence of ordiary clouds of unusual volume and density.

DARKE, *dârk*, WILLIAM: 1736–1801, Nov. 26; b. Philadelphia co., Penn.: revolutionary officer. He removed with his parents to Va. when four years old, entered the army when 19, was with Braddock at his defeat, 1755, appointed capt. at the beginning of the Revolutionary war, and was a col. at the surrender of Lord Cornwallis. After the war he was elected to the Va. legislature several times, was a member of the convention that ratified the federal constitution, lieut.col. commanding the left wing of Gen. St. Clair's army when defeated by the Miami Indians, 1791, Nov. 4, had a son killed and was seriously wounded himself in the battle, and became maj.gen. of state militia.

DARKHAN, MOUNT, *dâr-chân':* lofty granite mountain in Mongolia; lat. 47° 36′ n., long. 110° 10′ e.; interesting as the place whither annually repair large numbers of Mongolians, to do honor to the memory of Genghis Khan (q.v.), to whom a monument has been erected here.

DARLASTON, *dâr'las-tun:* town, Staffordshire, England, 1½ m. n.n.w. of Wednesbury, 4 m. s.e. of Wolverhampton. It has large coal and iron mines; manufactures several kinds of iron from the ore; and does an extensive business in the production of articles of iron ware. Pop. 15,391.

DARLING, n. *dâr'lĭng* [AS. *deorling*, dim of *deor*, dear]: a much-loved one; a favorite; ADJ. dear; dearly beloved; favorite.

DARLING, *dâr'lĭng:* range of mountains in w. Australia, parallel to the w. coast, 10 to 25 m. inland; from the s.w. corner of the colony to a point abt. 250 m. farther north. The range has a height of 1,500 to 2,000 ft.; and in Mount William attains an elevation of 3,000 feet.

DARLING [from Lieut. Gen. Sir Ralph *Darling*, gov. of New South Wales 1825–31]: river in Australia, tributary of the Murray river; formed by the union of several head-streams, all of which rise in the great Dividing Range. The chief of these head-streams are the Barwon and Gwydir. The name Darling is sometimes applied to the Barwon especially; usually it refers to the united waters of several streams, above or just below the confluence of the Castlereagh and the Macquarie. Farther down the Darling receives the Culgoa and the Warrego from the n., and the Bogan from the south. Its length is stated at 850 m., and it and its tributaries are estimated to drain 198,000 sq. m. It joins the Murray at Wentworth, having received no tributary in its lower course. Much of the district traversed by it is an arid plain, save near the river bank; the river is subject to floods.

DARLING: district at the s.w. corner of New South Wales, scantily watered; 50,000 sq. miles.

DARLING, Grace: 1815, Nov. 24—1842, Oct. 20; b. Bamborough, England; daughter of William Darling, light-house keeper on Longstone, one of the Farne Islands. On the morning of 1838, Sep. 7, the *Forfarshire*, which, with 63 persons on board, had been wrecked among the Farne Islands, was seen by Darling from his light-house, lying broken on the rocks. At the solicitation of his daughter, then in her 22d year, he put off through the storm to the wreck, his only companion the girl who prompted the noble act. By wonderful strength and skill, they brought their boat to where the sufferers (nine in number) were crouched in momentary expectation of a watery grave, rescued them, and bore them safely to Longstone. The undertaking, so daring and successful, drew public admiration. The light-house at Longstone, no longer solitary and peaceful, was visited by many of the wealthy and the great. Presents, testimonials, and money were heaped at the feet of the heroine; but she did not long survive her change of circumstances. She died of consumption, after a year's illness. See *Grace Darling*, by E. Hope (1876).

DARLING DOWNS: lands in Australia, forming the richest pastoral district of Queensland, in the s. part of the colony. This is an upland district on and about the summit of the Dividing Range; 6,080 sq. m. It was discovered by Allan Cunningham, the botanist, 1827. There is also much fine agricultural land in which the cereals, potatoes, and all kinds of vegetables grow well.

DARLINGTON, *dâr'lĭng-ton*, or Darnton, *dârn'ton:* parliamentary and municipal borough in the south of the county of Durham, England, on the slope of a hill overlooking the Skerne near its junction with the Tees. The

chief industry of the place is connected with the extensive locomotive works. Brewing and tanning are carried on; and there are wool-mills Darlington's prosperity dates from the opening, 1825, of the Stockton and Darlington railway, mainly for carrying coals, and the first on which locomotive engines were employed. From the 11th c. the town belonged to the bishops of Durham, and till 1867 a borough bailiff, appointed by the bishop, managed its affairs; in that year it obtained a charter of incorporation. Near Darlington was the seat of George Allan the antiquary. St. Cuthberts, the beautiful parish church, built in the 12th c., has three carved stone stalls, and a tower 180 ft. high. At Oxen-le-field, 3 m. from Darlington, are curious cavities called Hell Kettles. Pop. 44,496.

DARLINGTONIA, n. *dâr-lĭng-tō′nĭ-a* [named after Dr. *Darlington*, an American botanist]: genus of pitcher-plants, belonging to the order *Sarraceniaceæ*. The *Darlingtonia Californica* grows in the n. part of California, chiefly in the district around Mt. Shasta. It is found in boggy places, on the slopes of mountains. It entraps insects, which are attracted to the curious hood or pitcher at the extremity of the tubular leaves; and, once inside, are prevented by the fine hairs which point downward from again returning. Sometimes the leaf-stems at their base are filled to the depth of four or five inches with insect remains. The larva of a small moth, *Xanthoptera semicrocea*, preys on the plant, and that of a dipterous insect, *Sarcophaga sarraceniæ*, feeds on the dead insects which it incloses.

DARMSTADT, *dârm′stât:* town of Germany, cap. of the grand-duchy of Hesse-Darmstadt, residence of the grand duke, and seat of govt.; on the river Darm, 15 m. s. of Frankfurt-on-the-Main. It consists of an old and new town, both surrounded by walls and ditches. The streets of the former are narrow and squalid; those of the latter present many imposing specimens of architecture. Darmstadt has five public squares, from the centre of one of which a fine Doric column rises to the height of 134 ft., and is surmounted by a statue of the Grand Duke Louis who founded the new town. Besides the arsenal, the barracks, and the various religious edifices, one of which is crowned by a dome supported upon 28 large columns, Darmstadt has two palaces; one of these, the old ducal palace, contains the museums of painting—comprising 700 pictures, some of them by the most famous of the old masters—and natural history, in which are shown fossil remains of the dinotherium. The palace contains also a public library of 380,000 vols. Darmstadt is more dependent upon its ducal court and the government, which holds its seat there, than upon its commerce or manufactures, though these are now becoming more important. Pop., with suburb (1900) 72,381.

DARN, v. *dârn* [originally signified a patch: OF. *darne*, a slice: W. *darn*, a piece, a fragment; *dyrnaid*, a handful: Gael. *dòrn*, a short cut, a piece; *dornan*, a handful]: to mend a rent or hole by interlacing it with stitches; to sew

together in imitation of the texture of the stuff. DAR'NING, imp. DARNED, pp. *dârnd*. DARN'NER, n. one who. DARNING-BALL, n. an egg-shaped ball, made of hard wood, ivory, cocoa-nut shells, or glass, and employed as a substitute for the hand in the darning of stockings; a darning-last. DARNING-LAST, a potato, a small gourd, or anything similar, used to stretch a portion of a stocking while being darned. DARNING-NEEDLE, a long strong needle for mending holes or rents.

DARNEL, n. *dâr'nĕl* [Lith. *durnas*, foolish, crazy: Sw. *dare;* Ger. *thor*, a fool—from the supposed effects of the plant when eaten], (*Lolium temulentum*): grass of the same genus with the valuable RYE-GRASS (q.v.), an annual, common in grain-fields in many parts of Europe. It has no tufts of leaves from the root, the glumes are as long as the spikelets, or longer, the spikelets contain 5–7 florets which are awned. This grass has from ancient times been reputed to have a narcotic poisonous seed, to which many bad effects were ascribed, which, in years of bad harvest, were observed to ensue upon the eating of bread or the feeding of horses upon oats. Even Lindley, in his *Medical and Œconomical Botany*, 1849, ascribes narcotic and acrid qualities to D. seed, and speaks of fatal consequences as produced by it when mixed with flour, saying that it 'is the only authentic instance of unwholesome qualities in the order of the Grasses.' This statement is adopted by Asa Gray, but disputed by others, who maintain the perfect harmlessness of this grass and its seed, and refer the effects to damaged grain.—The Common D. (*L. perenne*), Ray Grass or Rye-grass, has the glume shorter than the spikelet, 8–15 flowers. It is a fair pasture grass.

Darnel.

DARNETAL, *dâr-nĕ-tâl':* town of France, dept. of Seine-Inférieure, about 2½ m. e. of Rouen. It is well built, and has two Gothic churches. Situated at the top of a narrow valley, and intersected by two streams, D. possesses unusual facilities for cloth and other woolen manufactures. Pop. (1891) 6,609.

DARNLEY, *dârn'lĭ*, HENRY STEWART, Lord: 1546–1567, Feb. 10; b. England; cousin and husband of Mary Queen of Scots (q.v.).

DARRAIGN, or DARRAIN, v. *dăr-rān'* [OF. *desrener* and *dérainer*, to deny very strongly—from mid. L. *deratīōnārĕ*, to settle the legal account]: in *OE.*, to answer an accusation; to settle a controversy by battle; to arrange an army in order of battle.

DART, n. *dârt* [F. *dard;* OF. *dart*, a dart: Bret. *tarz*, a clap: W. *tarddu*, to spring forth or appear, as the dawn: It. *dardo:* AS. *darath*]: a short lance; a sharp-pointed weapon to be thrown by the hand: V. to throw a pointed weapon with a sudden thrust; to shoot; to send rapidly; to emit, as the sun: to spring or run with celerity; to start suddenly and

run. DART'ING, imp.: ADJ. throwing out or sending forth darts, rays, and the like. DART'ED, pp. DART'ER, n. one who; a bird of the pelican family inhabiting Africa and America. DART'INGLY, ad. *-li*.

DARTARS, n. *dart'ėrz* [F. *dartre*, ringworm, tetters]: an ulcer on the skin, to which lambs are subject.

DART'ER (*Plotus*): genus of birds very nearly allied to

Darter (*Plotus Anhinga*).

cormorants (q.v.), but having a bill longer than the head, perfectly straight, slender, and sharp-pointed; remarkable also for the great length of the neck, which has obtained for them the name of *Snake-birds*. They derive the name D. from darting forward their bill at their prey by means of their long flexible neck. They are very voracious, and eat great quantities of fish, which they swallow entire. They are found in the warm parts of Africa and America.

DARTFORD, *dârt'ford* (Saxon, *Darentford*): town in the n.w. of Kent, 17 m. e.s.e. of London by rail, on the left bank of the Darent, which is navigable for barges. It lies in a narrow valley between two steep hills. It has large corn-mills, cotton and silk printing-works, large powder and paper mills; also manufactures of oil, iron, and machinery. Near D. stood the first rolling, slitting, and wire-drawing mill in England, as well as the first paper-mill, built by Spielman (d. 1607). Here stand the ruins of a nunnery, founded 1355 by Edward III., with 12 acres of walled orchards and gardens. This king held a tournament here 1331. Wat Tyler's insurrection, in the reign of Richard II., broke out at D. 1381. Watling street, an ancient Roman road, crossed the river here. Near D. Heath are many ancient chalk hollows and pits, with deep shafts leading to numerous chambers and galleries, excavated probably for sepulture, for retreat, or to procure the chalk. Pop. (1881) 10,567; (1891) 11,962.

DARTFORD WARBLER, n. *dart'fėrd waw'r blėr:* the *Sylvia provincialis*.

DARTMOOR, *dârt'môr:* granitic table-land in the s.w. part of the county of Devon, England, remarkable for its wild and rugged scenery, its towering rock-capped hills, the numerous streams that have their source in its boggy soil, and the many cyclopean relics of the aboriginal inhabitants scattered over its solitary wastes, where the deep silence is broken only by the sudden flight of the ring-ouzel, the screams of the curlew, or the shrill whistle of the lapwing, dotterel, or stone-plover. D. Proper (or the ancient and royal forest of that name) and its adjuncts, including the outlying common lands that present the same physical features, extend about 20 m. from e. to w., and 22 m. from n. to s., occupying one-fifth of the entire area of the county of Devon, or more than 130,000 acres. This moorland region, encircled by a natural rampart, moated by deep valleys, has a very considerable elevation above the surrounding country, and culminates in Yes Tor, 2,050 ft. above sea-level. Its broken uneven surface has been compared, not inaptly, to 'the long rolling waves of a tempestuous ocean, fixed into solidity by some instantaneous and powerful impulse.'

The most important *rivers* that rise in northern D. are the Dart, the Teign, the Taw, the West Ockment or Okement, the Lyd, the Tavy, and the Walkham; while from the swamps of southern D. spring the Plym, the Yealm, the Erme or Aime, and the Avon, Aven, or Aune.

Geologically, D. is formed, for the most part, of granite rock, protruded through the shales, slates, and sandstones of the Devonian system. Large masses of trap occur at White Tor, Cock's Tor, and other localities. Tin, copper, and manganese are found among the granite, of which four varieties—common, finer, red, and compact—are distinguished. These, as well as the several kinds of trap-rock, are much used for building, etc. At Wheal, Duchy, and Birch Tor are productive tin mines. The *soil* of D. is chiefly of peat, which in the bottoms has accumulated in some places to the depth of 25 ft.; it rests on a subsoil of fine sand. Many of the well-watered dells and ravines are fertile, while the whole moor affords pasturage for cattle, sheep, and horses. Among the mosses and lichens, with which the region abounds, are the *Lecanora perella* and the *L. tartarea*, or Cudbear Lichen: see CUDBEAR. Some years ago, both these lichens were largely exported; and it is said that, from 1762 to 67 inclusive, nearly 100 tons of the *L. tartarea* were collected from the tors of the moor. Wistman's Wood, a grove of stunted oak-trees, averaging about 10 ft. in height, is of venerable antiquity. It stands on a rocky declivity about 400 yards in length, and measures less than 100 yards across the widest part. The *ornithology* of D. is more limited than formerly; the progress of cultivation and the preservation of game are driving away the eagle, the bustard, the crane, and the kite, which are now rarely seen. The blackcock is likewise becoming extinct. Dr. Moore says: 'The frequenters of the uncultivated parts are now chiefly the sparrow-hawk, the hobby, the goshawk, the hen-harrier, the brown or marsh harrier, and the buzzard.

The *antiquities* of Dartmoor, as illustrating ancient periods of British history, are worth attentive study; of these, the Grey Wethers, below Sittaford Tor—a fine specimen of what is usually styled a Druidical circular temple—the vestiges of a large aboriginal village at Grimspound, the cromlech at Drewsteignton, the logan-stones and stone-avenues, the kistvaens, barrows, cairns, rock-pillars, and ancient trackways, whose story the old tors alone could tell, are examples. Many legends and stories of moorland adventure are related; but the most famous is that of the bold hunter, Childe of Plymstock, whose fate Carrington has celebrated in a spirited ballad. See Carrington's Poems, Mrs. Bray's *Tamar and Tavy*, and Murray's *Handbook for Devon and Cornwall.*

During the long war with France, consequent on the great revolution and the career of Napoleon, a prison was erected in the centre of the w. quarter of Dartmoor, at about 1,400 ft. above sea-level, for the accommodation of prisoners of war. The first stone was laid 1806, Mar. 20, and the building was finished at a cost of £127,000. Prince Town sprang up close by, and soon became a thriving place. The prison is now used as a depot for convicts, who are employed in cultivating the adjacent moor.

The castle, manor, and forest of Dartmoor were granted by Henry III., to his brother Richard, Earl of Cornwall; and since 1337, Dartmoor has been permanently annexed to the Duchy of Cornwall.

See De la Beche's *Report on the Geology of Cornwall, Devon, and West Somerset* (Lond. 1839); and for a full account of Dartmoor *A Perambulation of the Ancient and Royal Forest of Dartmoor*, etc., by Rev. S. Rowe (1856); which contains valuable *Papers on the Geology, Soil, Botany, and Ornithology of Dartmoor*, by Ed. Moore, M.D.

DARTMOUTH, *dârt'mŭth*, Canada, town of Halifax County, Nova Scotia; at the mouth of a small river flowing into Halifax harbor, opposite Halifax, of which it is practically a suburb. It has fine private residences, churches, and schools, and is the seat of the Provincial Asylum for the Insane. The chief manufactories are iron foundries, rolling mills, a sugar-refinery, tanneries, rope works, a brewery, soap and cocoa works, molasses blending works, boiler works, marine railway works, and flour mills. The municipality controls its steam ferry to Halifax and the water and sewerage works. Fort Clarence, below the town, defends the dangerous Eastern Passage into the harbor. Dartmouth was destroyed by the Indians two years after its founding in 1749, but afterward rebuilt. Pop. (1901) 4,806.

DARTMOUTH, municipal borough and seaport in the south of Devonshire, England. It is built in terraces on a steep slope 300 to 400 ft. high, on the right bank of the romantic estuary of the river Dart, at a short distance from the sea. Dartmouth is 32 m. s.-by-w. of Exeter. St. Saviour's Church, of the 14th c., has a richly sculptured, painted, and gilt stone pulpit, a highly ornamented

interior, and a beautifully carved rood-loft. Many of the inhabitants are engaged in the pilchard and Labrador fisheries. The chief exports are woolens, cider, and barley. Dartmouth is a quarantine port of the English Channel, and has considerable trade. At Dartmouth, in 1190, the crusaders, under Richard Cœur-de-Lion, embarked for the Holy Land. The French burned the town in the time of Richard I, but were repulsed in a third attack on it 1404. In the reign of Edward III, Dartmouth furnished 31 ships for the siege of Calais. In 1643, Prince Maurice besieged and garrisoned Dartmouth for Charles I; but in 1646, Fairfax stormed and took it. Pop. about 6,000.

DARTMOUTH COLLEGE, *dârt'mŭth:* at Hanover, N. H.; fourth oldest of the New England colleges. It is the outgrowth of a school for the education of Indian children established by Eleazar Wheelock, D.D., at Lebanon, Conn., 1754, and named Moor's Charity School in honor of Joshua Moor, a farmer, who presented it a building and two acres of land. Subsequently Samson Occom, one of Dr. Wheelock's brightest Indian pupils, and the Rev. Nathaniel Whitaker, went to England, presented the cause to influential people, received subscriptions of nearly $50,000, and organized a board of trustees, of which Lord Dartmouth was elected pres. In the meantime the success of the institution through its popularity among the Indians had created a necessity for larger accommodations. Of the many sites offered Dr. Wheelock he chose that of Hanover, and was granted about 44,000 acres of land. Through the efforts of its English friends a charter for a college to be connected with the school was obtained from George III., and issued by John Wentworth, the last royal gov. of N. H., 1769, Dec. 13. In 1770 Dr. Wheelock removed his family and school to Hanover, and in the following year graduated his first college class, four in number. On the organization of the college, Dr. Wheelock was elected its first pres., and Lord Dartmouth's name was given it in recognition of his valuable services. Pres. Wheelock died 1779, and was succeeded by his son, John Wheelock, LL.D., who served as pres. till 1815, when he was removed by the trustees in consequence of radical differences of opinion concerning questions of administration. In 1816 the legislature of N. H. claimed the right to amend the royal charter, and passed acts changing the title of the college to Dartmouth University, creating a new corporation, and vesting the college property in it. The trustees opposed the act, and with a view of testing its constitutionality began a suit in the supreme court for the recovery of the college property. This court sustained the action of the legislature, and the trustees appealed to the U. S. supreme court, of which John Marshall was then chief-justice, where the cause of the college was successfully argued by Daniel Webster. The corporation created by the legislature chose ex-pres. Wheelock as pres. of the univ., and on his death a few weeks afterward elected William Allen, D.D., pres.

He retained the office till the decision of the U. S. supreme court was made known, when Francis Brown, D.D., who had been elected by the old board to succeed pres. Wheelock 1815, was inaugurated. From its inception Dartmouth College has been conducted on a conservative plan. It has aimed at a high religious tone, and though most of its trustees and teachers have been Congregationalists, it has never been sectarian in its teachings. It holds fast the old idea of the American college, whose object is that general and symmetrical training which should precede the particular and professional. Dartmouth College believes in a carefully devised curriculum and in the ancient classics; yet readily admits to the former the elective principle, and encourages the studies of science and modern languages. She has already a number of options, both as to courses and as to particular studies, and, while adhering to the old college forms, has provided several collateral or post-graduate institutions, offering diversified opportunities of general and special culture. These various depts. as they now exist are as follows: (1) The old academic dept., with its four years' curriculum, including the privilege of a partial course, and a number of particular options. (2) The Chandler scientific dept. established 1851 through a bequest of $50,000 made by Abiel Chandler, with a regular four years' course, and having, with the option of a partial course through all the years, several elective lines of study in the last year. Latin and Greek are omitted, French and German included, scientific branches are made most prominent, and degrees of B. Sci. and M. Sci. are conferred. (3) The agricultural dept., or the N. H. college of agriculture and the mechanic arts, established 1866 under the conditions of a grant of land by the federal govt., with a three years' course, with the choice, after the first year, of an agricultural or mechanical line of study. The course embraces mathematics, physics, drawing, book-keeping, botany, chemistry, physiology, zoology, mechanics, political economy, and geology. The college has an experimental farm of nearly 200 acres, and confers in this dept. the degree of B. Sci. (4) The engineering dept., or Thayer school of civil engineering, established 1871, through a gift of $70,000 by Gen. Sylvanus Thayer. This is substantially, though not formally, a post-graduate or professional dept., with a two years' course. The requisites for admission are, in some important branches, even more than a college curriculum commonly embraces; and it is designed to carry the study of civil engineering to the highest point. (5) The medical dept., or the old N. H. medical college, established 1797, which has had a long and prosperous career, and now ranks with the best medical institutions in the country. There is connected with it, in addition to an annual course of lectures of 20 weeks, a good course of private medical instruction. (6) Moor's Charity School, though no longer a distinct organization, has an official recognition still in consequence of a fund belonging to it. which is appropriated to the education of Indian children

under the direction of the pres. of the college. The chair of law and political science was established 1885, In 1900, the trustees created the 'Amos Tuck school of administration and finance' according to the terms of the Amos Tuck endowment fund, the gift of $300,000 by Mr Edward Tuck, of the class of 1862, as a memorial to his father. Dartmouth College has an astronomical and meteorological observatory with numerous valuable instruments, a museum of pathological anatomy, a museum of geology and natural history, gymnasium, chemical laboratory, extensive philosophical apparatus, and several dept. and general libraries. In 1906, there were 88 members of the faculty, 1,134 students, and 100,000 vols.in the several libraries of the institution.

DARU, *dâ-rū'*, Pierre Antoine Noel Bruno, Comte: 1767, Jan. 12—1829, Sep. 5: b. Montpellier: author, also one of the ablest of the first Napoleon's ministers. In his 16th year he entered the army. In 1791, he was appointed intendant of the army of Brittany; but having the misfortune to speak ironically of the English as 'our *friends*,' the suspicious revolutionists threw him into prison as a royalist, where he remained till the fall of Robespierre. He spent his time in translating the Odes and Epistles of Horace (*Traduction en Vers des Poésies d'Horace*, 1800). Subsequently, he translated the Satires. In the same year in which his version of Horace appeared (1800), he published *Cleopedie, ou la Théorie des Réputations en Littérature.* Napoleon, in 1805, made him a councilor of state, and, at a later period, intrusted him with the portfolio of the war-department. After the restoration of the Bourbons, he was made a peer. Daru was a member of the Institute and of the Acad. of Sciences. His writings are numerous. Besides those above mentioned, the chief are *Histoire de la Republique de Venise* (7 vols. 1819–21); *Histoire de Bretagne* (3 vols. 1826); *Eloges; Génie du Christianisme; Discours sur les Facultés de l'Homme* (in verse); *Discours sur la Liberté de la Presse.*

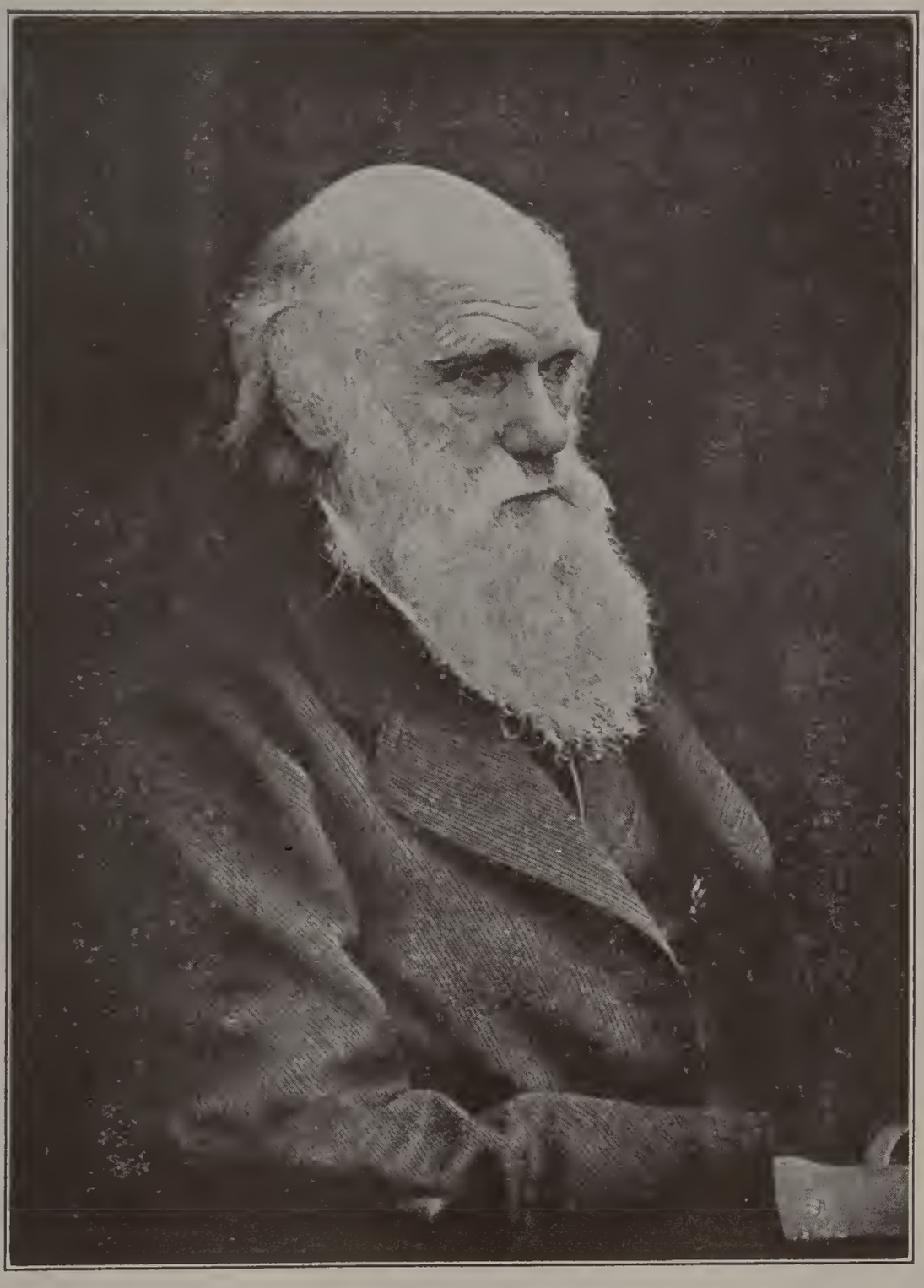
His son, Napoleon, Count Daru, 1807, June 11—1890, Feb. 20, b. Paris, was a godson of Napoleon I, and the Empress Josephine, educated at the Lycée Louis-le-Grand, graduated at the Polytechnic School 1825, and served with the artil. in the army till 1847. On the death of his father, he entered the chamber of peers and supported the Orleans monarchy. After the revolution 1848 he adhered to the republic, was twice elected to the constituent assembly, and was its vice-pres. 1850–1. For protesting against the *coup d'etat* 1851 he was imprisoned some time in Vincennes by order of Louis Napoleon. He was elected a deputy 1869, joined the 'left centre' party, became a member of Ollivier's cabinet 1870, June 2, succeeded Prince de la Tour d'Auvergne at the head of the dept. of foreign affairs, and openly advocated the return of the Orleans princes. During the Franco-German war he was a member of the committee of defense, 1871 was elected to the national assembly, 1876 was elected senator for La Manche, and 1879 retired to private life.

D'ARUSMONT, *dâ-rü-mōng'*, FRANCES, (maiden name, FANNY WRIGHT): 1795, Sep. 6—1852, Dec. 14; b. Dundee, Scotland: reformer. She was left an orphan when nine years old, and early imbibed the ideas of Adam Smith, Dr. Cullen, and other men of the day, for the improvement of the conditions of human life. She removed to the United States 1818 and spent three years in travelling and studying the phases of social life, then passed four years in France, and, returning to the United States 1825, purchased a tract of 2,000 acres in Tenn., and established a colony of emancipated slaves. She was a fervent advocate of the abolition of slavery. In 1838 she married M. D'Arusmont in France, but soon separated from him and made her permanent abode in Cincinnati. She was author of *Views on Soeiety and Manners in Ameriea* (London 1821); *A Few Days in Athens* (London 1822); *Leetures on Free Inquiry* (New York 1829-36); and *Altorf*, a tragedy (Philadelphia 1819).

DARWIN, *dâr'wĭn*, CHARLES, F.R.S.: English naturalist of highest eminence: 1809, Feb. 12—1882, Apr. 19; b. Shrewsbury; son of Dr. Robert W. Darwin, F.R.S., and grandson of Erasmus Darwin (q.v.). His mother was daughter of Josiah Wedgwood, famous manufacturer of pottery. After attending a public school at Shrewsbury, he studied at Edinburgh Univ. for two sessions, thence proceeded to Christ's College, Cambridge, where he took his degree B.A. 1831. He then volunteered to go as naturalist in H. M. S. *Beagle*, commanded by Captain Fitzroy, R.N., and started for a survey of S. America, and the circumnavigation of the globe, 1831, Dec. 27, returning to England 1836, Oct. 2. His entire life afterward, so far as his health permitted, was devoted to scientific researches. Darwin was a fellow of the principal scientific societies, obtained the Royal Society's medal, and the Wollaston medal of the Geological Society.—His earliest well-known work, *The Voyage of a Naturalist* (2d ed. 1845), is interesting and beautifully written. In 1839 was published his *Journal of Researehes into the Geology and Natural History of the Various Countries Visited by H. M. S. Beagle;* in 1840-43, *Zoology of the Voyage of H. M., S. Beagle*, published by govt., to which Darwin contributed the introduction, and many of the notes; in 1842, *The Strueture and Distribution of Coral Reefs;* in 1844, *Geological Observations on Volcanie Islands;* in 1846, *Geological Observations on S. Ameriea.* He also wrote many papers in the *Transactions of the Geologieal Society.* In 1851-53, appeared his valuable *Monograph of the Cirripedia;* and in 1859, Darwin's name became 'familiar as a household word' to the mass of educated and semi-educated Englishmen and Americans through the publication of his work, *The Origin of Species by means of Natural Selection, or the Preservation of Favored Raees in the Struggle of Life.* In the *Origin of Species*, Darwin contends that the various species of plants and animals, instead of being each specially created and immutable, are continually suffering

change through a process of adaptation, by which those varieties of species that are in any way better fitted for the conditions of their life survive and multiply at the expense of others. So potent and universal does this process of natural selection seem to be, that Darwin considers it capable, with other less important causes, of explaining how all existing species may have descended from one or a very few low forms of life. This theory excited fierce controversies, awaits complete proof; but it has been embraced by many of the ablest naturalists, and has induced great changes in the methods of biology and kindred sciences: see DARWINIAN THEORY: SPECIES. Other works are: *Fertilization of Orchids* (1862); *Variations of Plants and Animals under Domestication* (1867); *The Descent of Man and Selection in relation to Sex* (1871); *Expression of the Emotions in Man and Animals* (1873); *Insectivorus Plants* (1875); *Climbing Plants* (1875); *The Effects of Cross and Self-fertilization in the Vegetable Kingdom* (1876); *Different Forms of Flowers in Plants of the same Species* (1877); *The Power of Movement in Plants* (1880), a work in which it was proved that every growing part of every plant is always moving round or 'circumnutating,' as Darwin calls it; *The Formation of Vegetable Mold through the Action of Worms* (1881). The latter work, which excited great popular interest, showed that a part of the mold which covers the globe is the work of earthworms, having been voided by them as worm-castings. Darwin's caution in statement was very noticeable: it has not been imitated by all his followers. He received many high distinctions, such as the Prussian order *Pour le Mérite* (1871), degrees from Leyden and Cambridge, and the membership of the French Acad. (1878). His death called forth universal expressions of respect, and he was buried in Westminster Abbey.

DAR'WIN, ERASMUS, M.D.: 1731, Dec. 12—1802, Apr. 18; b. Elton, near Newark, Nottinghamshire, England: physician, natural philosopher, and didactic poet. He studied first at Cambridge, afterward at Edinburgh, where he took his degree; and settled in Derby, where he died. Darwin had formerly great reputation as physiologist, but his system is, for the most part, inconsequential, baseless, and untenable. Yet many of his ideas are original, suggestive, and contain germs of important truths. His strength and weakness lay in his faculty for seeing analogies in nature. Sometimes he is exceedingly happy in his discoveries; at other times quite fantastical. The same is the case with his verse, where, amid the frequent extravagance and incomprehensibility of his notions, there burst forth strains of genuine poetry. Interest in his speculations has been revived by the recognition of his partial anticipation of Lamarck's views on evolution, and so of the views of his own famous grandson. Darwin's chief works are *Botanic Garden*, in verse (1781); *Zoonomia, or the Laws of Organic Life* (1793); *Phytologia, or Philosophy of Agriculture* (1800). See Krause's *Life of Erasmus Darwin*, trans. by Dallas (1879).



CHARLES DARWIN.

DARWINIAN THEORY.

DARWINIAN THEORY, *dâr-wĭn'ĭ-ăn:* theory of the origin of species, set forth by Charles Darwin, 1859; called sometimes the *theory of development*, or the *evolutionary hypothesis*. Before presenting the theory of Evolution of Plants and Animals by Natural Selection, as promulgated by Charles Darwin (q.v.), it is necessary to consider the scope and aim of biological science; also, the influence exerted upon biology by the progress of other departments of knowledge.

1. *Nature of Biology.*—The primary labors of the botanist and zoologist are to collect and preserve, to describe and figure the innumerable and varied forms occurring in nature; in this task, therefore, naturalists have been occupied since the earliest times. The increase of such knowledge necessitated the attempt at orderly arrangement and intelligible cataloguing—problems solved by Linnæus, whose *Systema Naturæ* first satisfactorily organized the natural history sciences.

The detailed study of internal structure, as well as of external form, commenced by Hunter and Haller, was enormously extended by Cuvier (q.v.), whose labors resulted in the conception that the multitudinous forms of animal life were all organized upon a few distinct plans, of which he defined the vertebrate, molluscan, articulate, and radiate; while Geoffroy St. Hilaire and Goethe were principally instrumental in introducing the idea of homology (see METAMORPHOSIS). But is is not sufficient to analyse the organism into its constituent organs, and to describe and compare these; we must inquire into their minute structure. These organs were analyzed into *tissues* by Bichât, and these again into their component protoplasmic units—*cells*—by Schleiden and Schwann, and thus anatomy acquired the subordinate province of *Histology*. Finally, the mode of origin of the adult organism from the germ or egg comes to be investigated, and after thus adding to our previous knowledge that of *Embryology*, we are in a position to complete our summary of the structural aspects of an organism by defining its relation to its fellows—in other words, by fixing its position in the natural system of classification. These subjects of anatomy, histology, embryology, and *Taxonomy* or classification constitute the science of *Morphology*.

But an organism has yet other aspects, functional as well as structural, dynamical as well as statical; its organs have activities, and for the study of these, a new department of biology must be constituted—*Physiology*, which (though, by reason of the urgent needs of the practitioner and the student of medicine, as yet mainly concentrated upon the study of the functions of the human body) has a field co-extensive with morphology.

To the consideration of the forms and the activities of organisms, a new line of inquiry has been much more recently added, that referring to the position in time and space in which the organism occurs, and the answer to this comes under a new head, that of *Distribution*, chronological (geological) or geographical, as the case may be.

These three great divisions of biological knowledge, mor-

phological, physiological, and distributional, being constituted, the questions *what*, *how*, and *where* being approximately answered (and since the search for final causes—for the *why*—is outside the field of merely physical science), only one more possible inquiry remains—namely, *whence* these organisms, with their particular structures, functions and positions in space and time? In other words, how did all these phenomena arise—what is their *origin* or *Ætiology?*

The necessity for a theory of the origin of plants and animals thus coming to be felt, only two hypotheses present themselves since the suggestion that they may have existed in their present state from infinite time, is not only incapable of support by positive evidence, but absolutely negatived by geology. The first and historically earlier hypothesis is that of Special Creation, which assumes the sudden origin of the existing species, without reference to previously existing species, by the intervention of supernatural causes; the second is that of Evolution, and assumes the gradual origin of the existing species from pre-existing species by ordinary descent, with modification by the action of natural causes. Reflection will show (1) that the idea of cause, though presented in different forms by the two rival hypotheses, and at different degrees of remoteness, is not excluded by one more than by the other; and (2) that just as the hypothesis of the original of solar and stellar systems from nebulæ is considered on its own merits, without confusion with any hypotheses which may subsequently arise as to the origin of the nebulæ themselves, so we must separate the inquiry as to the origin of *species*, with which alone the Darwinian theory is concerned, from all subsequent hypotheses as to the origin or the nature of *life* (see LIFE: GENERATION, SPONTANEOUS), thus keeping clear of the misunderstandings and misrepresentations with which the subject has too frequently been encumbered.

First in order, therefore, the argument for and against the theory of the origin of species by special creation demands our examination, of course on scientific grounds alone. From the naturalist's point of view, it is urged that not only is no scientific evidence for special creation forthcoming, but that the theory fails to explain the existing facts, much less to act as an instrument of research; while on philosophical grounds, it is objected that it tends to exclude scientific explanations of existing facts, and stands discredited *a priori* as the last survivor of a series of universally diffused pre-scientific beliefs in the irregular and arbitrary occurrence of phenomena, and so is destitute of support from analogy; that it neither satisfies the intellectual wants, nor meets the moral difficulties of the explanation of nature; and, that it is a purely verbal hypothesis, incapable of any definite representation in thought. Passing to the second theory, we find it strongly urged in the first place, that not only is much evidence forthcoming, but that it does plausibly explain the known facts, and is even serviceable in the search for new ones; that it belongs to that class of explanations in terms of the natural order of things which have now superseded the system of catastrophic and contra-

natural hypotheses in every other field of knowledge; that it is capable of clear representation in thought; and that it satisfies not merely the intellectual wants, but meets the moral difficulties. For full development on the naturalist's side of this most general form of the discussion, see Spencer's *Principles of Biology*, vol. i.

2. *Influence on Biology of Progress in other Sciences.*—The enormous progress of every department of knowledge during the past few generations has lain not merely, as is commonly supposed, in ever-increasing minuteness of specialization upon ever-multiplying details, but rather in the concentration of innumerable previously unrelated phenomena into few groups, and of these again into fewer; through the construction of far-reaching hypotheses, which (as is claimed), surviving and satisfying scrutiny and criticism, observation and experiment, have passed through stages of possibility and likelihood, to that of overwhelming (or as it is claimed practically infinite), probability, and are then termed generalizations, or more figuratively, laws. A rich harvest of such general conceptions has been garnered by astronomy, and such successive labors as those of Copernicus, Kepler, and Newton, in widening our knowledge of the universe, have widened not a little the theoretic range and grasp of the scientific intellect. And it is important to bear in mind, first, that each of these advances consisted, as every such advance must do, first, in the employment of a promising though yet unverified scientific hypothesis; afterward in the substitution of that hypothesis when finally verified, for a provisional, though time-honored explanation, in terms of the mysterious and supernatural; and, secondly, that a theory of the evolution of solar and stellar systems (see NEBULAR HYPOTHESIS) is largely maintained by modern astronomers. Thus the naturalist's claim is that his hypothesis of the evolution of plants and animals by natural selection, takes equal rank for evidence with the law of gravitation, and similar modern discoveries—a claim not conceded by his opponents, nor even by many who concede that a general probability pertaining to one or another theory of evolution.

In chemistry, such conceptions as those of molecular constitution, and of the indestructibility of matter, of the similarity in composition of our planet with sun and stars, and of the intimate relation between inorganic and organic compounds, are highly instructive; while the actually observed genesis of many species of minerals by the action of natural causes, and the frequent transmutation of one species into another, when some definite change takes place in the surrounding conditions, are not without interest. Moreover, to the theory of the conservation of energy (see FORCE) unifying as it has done, not only all the physical sciences, but these with physiology, a far vaster influence upon biology is due.

But the most important of all influences on the organic sciences has come from geology. The discovery that our earth dates from an almost incalculably remote antiquity, together with the establishment as the fundamental axiom

of the science that the present is the key to the past, and whence is drawn the inference, that the present phenomena of the earth's crust do not in large degree result from catastrophe and deluge, still less from special creation, but are in great measure the product of a slow and progressive evolution (by natural causes still in operation) from a widely different previously existing state of things, furnish the evolutionist with the most primary of his data. To the establishment of this new theory of geologic evolution, revolutionary yet uniformitarian, of which the theory of organic evolution is but the complement and corollary, it is interesting to note that after Hutton and Lyell, perhaps no more important service has been rendered by any geological works than by the series (*Geological Observations,* 1844; *Coral Reefs,* 1842; *Earthworms,* 1881; and the essay on the *Imperfection of the Geological Record,* summarized below), which we owe to Darwin.

Nor is it only the preliminary sciences which have influenced biologists, and have aided them in their inquiries as to the origin of their set of phenomena. The human and social sciences—psychology and philology, anthropology and history, have all contributed their ætiological example and results, so that it might almost be debated whether the biological evolutionist has not been more indebted to all the other sciences for his theory, than they to him for theirs.

Origin of the Idea of Evolution in Biology.—No doubt largely influenced by such as existed of the scientific conceptions outlined above, as well as by the Cartesian doctrine, that the universe is a mechanism, and is therefore to be explained on mechanical principles, the evolutionary hypothesis made its first distinct appearance in the work of De Maillet (*Telliamed,* written 1735, published 1758), and was expounded in more or less varying form by more than 30 writers before Darwin, among whom the most notable were Erasmus Darwin, Goethe, Lamarck, and Geoffroy St. Hilaire. Their hypotheses, although based on masses of biological evidence drawn from homologies and rudimentary organs, from classification and development, from geological and geographical distribution, and so on, never succeeded in gaining general acceptance among naturalists—a failure which has been attributed to established prejudice aided as it was by the authority of Cuvier. Yet, while rendering it extremely probable that modification had occurred, they all came short, as Darwin has pointed out, in one most important particular, that of showing *how* the modification of one species from another could take place, 'so as to acquire that perfection of structure and coadaptation which justly excites our admiration;' since the hypotheses of the potency of external conditions, of habit, or of the volition of the organism itself, alike successively broke down.

Darwin, in his turn, struck especially by the distributional phenomena he witnessed during his 'Naturalists' Voyage,' devoted himself to the solution of the problem of the origin of species, specially concentrating his efforts

upon this weakest point of the preceding theories. After 21 years' continuous work, he was compelled, on receiving a paper by Mr. A. R. Wallace (then exploring the Malay Archipelago), in which views identical with his own were expressed, to proceed to the publication of his results, first in brief outline (*Journ. Linn. Soc.*, 1858), and the following year in that fuller abstract, *The Origin of Species by means of Natural Selection*, which may now be briefly summarized, so far as further compression of such 'intellectual pemmican' is possible. For details and explanations, see the original work (sixth ed. 1875).

Outline of 'Origin of Species.'—In order to gain insight into the means of modification, Darwin commences with a study of the variation of plants and animals under domestication (later expanded into a separate work; second ed. 1876).

Variation and Heredity.—While all plants and animals exhibit some degree of variation, this is greatest among domesticated species, owing to their new and less uniform conditions of life. These may act directly on the whole organization, or on separate parts, and the variation, though rarely, is sometimes definite, as when size increases with quantity of food, or color changes with its quality; or the conditions may act indirectly by influencing the reproductive system, which is peculiarly sensitive. Changed habits produce an inherited effect, e.g., the leg-bones of the common duck weigh proportionately more, and its wing-bones less, than in the wild variety, because it flies less and walks more. So, too, tame mammals acquire drooping ears, since these are rarely pricked in alarm. One variation is usually correlated with others, thus long-beaked pigeons have small feet, and conversely. All variations tend to be inherited. The popular belief that domestic races revert to the aboriginal stock is unsupported by facts.

Save that domestic varieties are less uniform than wild species, often differ more widely in some single part, and are fertile when crossed, there is no well-marked distinction between these and so-called true species. If, therefore, such varieties as of the dog can be shown to be descended from a single wild species, there necessarily arises great doubt as to immutability of closely allied natural species, such as the foxes. While the many breeds of dog appear to have arisen from several wild species, and those of cattle also from two or three, fowls, ducks, rabbits, etc., all certainly arise from a single ancestral species. The case of pigeons is of peculiar importance, since pouter, carrier, fantail, and tumbler differ so thoroughly, externally and internally, that any ornithologist would be compelled to assign to them, not merely specific but generic distinctness, if he had discovered them in the wild state. There is at least as much difficulty in believing that such breeds can have proceeded from a common ancestor, as in the case of any group of birds in nature; and every breeder of these and other domestic animals has been firmly convinced of their descent from distinct species.

Yet these are proved to arise from the common rock-dove (*Columba livia*) (see COLUMBIDÆ), and thus those who admit the unity of domestic races should be cautious in deriding the unity of wild ones.

Domestic races all exhibit adaptations to man's use or fancy, rather than their own good. The key to this is man's power of selection; nature gives successive variations, man accumulates them, so making for himself useful breeds, and often (e.g., sheep, cattle, roses, dahlias) profoundly modifying their character even in a single lifetime; so that in all characters to which he attends, they may differ more than the distinct species of the same genera. Again, more even than conscious, that unconscious selection which results from every one trying to possess and breed the best animals, is important. Two flocks of Leicester sheep, equally kept pure, appeared of quite different varieties after 50 years. Such slowly accumulated change explains why we know so little of the origin of domestic races; and its absence in regions inhabited by uncivilized man, explains why these yield no plants worth immediate culture. Human selection is facilitated by the keeping of large numbers, since variations will be more frequent, and by preventing crosses; some species vary, however, more than others.

Variation under Nature.—All like organisms in nature present individual differences, more considerable than is usually supposed; no two blades of grass are alike, and far more marked differences often occur, several castes or varieties sometimes existing in the same sex. Between these castes, and much more frequently between forms which systematic botanists and zoologists rank as true species, perfectly intermediate forms may occur. No agreement about the definition of species (the amount of difference necessary to give any two forms specific rank) has ever been come to; thus, in the British flora alone, there are nearly two hundred disputed forms, and individual opinion is in these cases the only criterion. As long as a genus is imperfectly known, and its species founded upon few specimens, they appear clearly limited. But with better knowledge, intermediate forms flow in, and doubts as to specific limits augment. The terms species and variety are thus arbitrarily given to sets of individuals more or less closely resembling each other. See VARIETY: SPECIES: GENUS.

Individual differences are thus of the highest importance, as the first steps toward the slightest varieties worth recording, these toward more distinct and permanent varieties, and these again toward sub-species, and these to species; though extinction may often stop the progress.

The species which present most varieties are those which have the greatest geographical range, or the widest diffusion in their own territory, or possess the greatest number of individuals; and in the larger genera of each country the species vary more frequently than in the smaller genera; and in many respects the species of large genera present a strong analogy with varieties, which analogy is alone intelligible on the view that they once existed as such.

Struggle for Existence.—All organic beings tend to increase with extreme rapidity, so that if not destroyed, the earth would soon be covered by the progeny of a single pair. This is evidenced not merely by calculation, but by actual observation of the extraordinary rapidity with which plants and animals have spread, when introduced into new and favorable circumstances.

Since organisms then are reproducing themselves so rapidly, and since all their offspring cannot escape their enemies, get food, and live, much less leave progeny in turn, —since, in other words, the doctrine of Malthus applies to animals and plants with manifold force (for these can have no artificial increase of food, and no prudential restraints on marriage,—there must in every case be a *struggle for existence*, either of one individual with another of the same species, or with the individuals of distinct species, or with the physical conditions of life; often, indeed, with all these at once, and that more or less intensely through the whole of life.

The checks to increase are most obscure, and vary in each case. In all cases the amount of food, of course, gives the extreme limit. The youngest organisms generally suffer most; seedlings, for instance, are destroyed in vast numbers; thus, even in a patch of ground, purposely dug and cleared, where no choking from other plants could take place, 295 out of 357 seedling-weeds were destroyed, chiefly by slugs and insects. So, too, the stock of game on an estate depends chiefly on the destruction of vermin. Climate also is highly important, and periodic seasons of extreme cold and drought seem the most effective of all checks—a severe winter sometimes destroying four-fifths or more of the birds of a locality. Epidemics, too, may occur, especially where numbers have inordinately increased. On the other hand, a large stock of individuals of the same species is essential for its preservation.

The complex relations of all animals and plants to each other require illustration. The plantation of part of a heath with Scotch fir leads to the profound alteration of its flora and fauna, while the growth of these firs again is wholly dependent upon the exclusion of cattle. Many flowers depend for fertilization on the visit of a special insect, e.g., red clover on humble-bees. But bees are destroyed by field-mice, and consequently protected by cats; hence, not only no bees, no clover, but also the more cats, the more clover! The struggle for life is most severe between individuals and varieties of the same species, and between the species of the same genus, since these tend to fill the same place in the economy of nature; hence we see the brown rat supplanting the black, and the hive-bee supplanting its Australian congener. The structure of every being is related to that of the others with which it competes, or from which it seeks to escape, or on which it preys; as is alike evident in the structure of the tiger, and of the parasite which clings to his hair. So, too, the albumen of a seed is useful chiefly in favoring the young plant's struggle for light and air against the adult plants around.

Natural Selection.—But how will the struggle for existence act with regard to variation? Can the principle of selection, so potent in the hands of man, apply under nature? Most efficiently so. Let us bear in mind (1) the constant occurrence of variation; (2) the infinite complexity of the relations in which organisms stand to each other, and to the physical conditions of life; and consequently (3) what infinitely varied diversities of structure might be useful to each being under changing conditions of life. Can it then be thought improbable (whatever may be said as to its actual occurrence) seeing that variations useful to man have undoubtedly occurred, that other variations useful in some way to each being in the great and complex battle of life, should also occur in the course of many generations? And if such do occur, can we doubt (remembering that many more individuals are born than can possibly survive) that individuals having any advantage, however slight, would have the best chance of surviving and of procreating their kind, while injurious variations would be destroyed? This preservation of favorable variations, and destruction of injurious ones, is termed Natural Selection, or, less figuratively, the Survival of the Fittest.

Taking the case of a country undergoing a change of climate, the proportional numbers of its inhabitants would change, some species probably also becoming extinct—and these changes would in many ways affect the survivors. A further disturbance would come from the immigration of new forms; or, if that were prevented, we should have places in the economy of nature which might be better filled up. Any slight favorable modification of the old species would tend to be preserved, and we have seen that changed conditions increase variability.

Nor are such changes, often though they have occurred, necessary in order to leave places for natural selection to fill by improving some of the varying forms. No country can be named where the native inhabitants are perfectly adapted to their conditions and competitors, for as some foreigners have taken firm possession in every country, we may safely conclude that the natives might have been modified with advantage to resist them.

And when human selection has produced such great results, why may not natural? The former acts only for man's own good, on mere external and visible characters, and irregularly throughout a short period; the latter acts for the good of the being itself, on the whole machinery of its life, and incessantly throughout almost infinite time. (It is important here to remember that the objection to this agency on the ground of its presumed insignificance is identical with that so long and unsuccessfully employed against Lyell's explanation of the origin of the physical features of the globe by summing up the existing natural changes.)

Natural selection thus leads to the improvement of each creature in relation to its organic and inorganic conditions of life, and consequently in most cases to what must be regarded as an advance in organization. Nevertheless, low

and simple forms will long endure, if well fitted for their simple conditions.

Natural selection may modify the egg, seed, or young, as easily as the adult, and these modifications may effect through correlation the structure of the latter, and conversely.

Besides Natural, we have to consider Sexual Selection, i.e., not merely do individuals struggle for existence, but the males struggle for the females, and the most vigorous thus tend to leave most progeny. Special weapons, offensive and defensive, like the cock's spurs, the stag's horns, or the lion's mane, are used in this struggle, and the most useful variations are thus those which are transmitted. Again, as man can in a short time give beauty to his domestic birds, so there is no good reason to doubt that female birds in thousands of generations, by selecting, as they are observed to do, the most melodious or beautiful males, might produce a marked effect, and many sexual differences are thus explained.

The theory of natural selection may be applied in special cases, e.g., (1) to explain the evolution of swift greyhound-like varieties of wolves; (2) the origin and the excretion of nectar in flowers, its use to insects, and their action in transferring pollen from flower to flower, and its advantage in intercrossing; and the resultant modification and adaptation of flower and insect to each other by the preservation of advantageous variations.

The circumstances favorable to the production of new forms through natural selection are also reviewed. These are chiefly, great variability, large numbers of individuals; the complex effects of intercrossing; isolation in small areas, yet also extension over continental ones, especially if these oscillate in level; and considerable lapse of time. Rare species are shown to be in process of extinction. The *divergence of character* in domestic breeds, largely due to the fact that 'fanciers do not, and will not, admire a medium standard, but like extremes,' applies throughout nature, from the circumstance that the more diversified the descendants from any one species become in structure, constitution, and habits, by so much will they be better enabled to seize on many and widely diversified places in nature, and so to increase its numbers. Thus, taking a carnivorous animal, which has reached the average numbers which its territory will support, it is evident that it can succeed in increasing only by its varying descendants seizing places hitherto occupied by other animals, thus changing their food or habitat. This must hold equally of all species, and is separately demonstrated for plants. The greatest amount of life can be supported by great diversification of structure; hence, in small areas where competition is severe, the inhabitants are extremely varied.

The probable effects of the action of Natural Selection, through divergence of character and extinction, on the descendants of a common ancestor are then discussed in detail with an illustrative diagram. This takes the form of a genealogical tree—'The great tree of life, which fills with

its dead and broken branches the crust of the earth, and covers the surface with its ever-branching and beautiful ramifications.'

Laws of Variation.—The following is a very brief summary. Of the cause of most variations we are still ignorant, but the same laws appear to have acted in producing the lesser differences between varieties of the same species, and the greater differences between species of the same genus. Changed conditions sometimes induce definite and permanent effects: habit, use, and disuse are potent in their effects. Specific characters are more variable than generic, and varietal than either. Rudimentary organs and secondary sexual characters are highly variable. Species closely related, of similar constitution and similarly influenced, present analogous variations, and frequently exhibit characters which can be explained only as reversions to those of their ancient progenitors; e.g., zebra-like stripes on horses, or wood-pigeon's marking on fantails, tumblers, etc.

Difficulties and Objections.—In four chapters all the miscellaneous objections raised against the theory between 1859, and the appearance of the latest edition, are successively stated, weighed, discussed, and met as well as the more serious difficulties pointed out by Darwin himself. These latter are, (1) the definiteness of species and the rarity of transitional forms; (2) the enormous degree of modification in habits and structure which the theory assumes, and the power of Natural Selection to produce on the one hand an organ of such trifling importance as the tail of a giraffe, and on the other, an organ so wonderful as the eye; (3) the acquirement and modification by Natural Selection of such marvelous instincts as those of the bee; (4) the sterility of crossed species, and the fertility of crossed varieties. For these discussions, see the original work.

Imperfection of the Geological Record.—On the doctrine of the extermination of an enormous number of intermediate varieties, the links between existing and remote ancestral forms—why is not every geological formation charged with such links? Why does not every collection of fossils afford plain evidence of the gradation and mutation of the forms of life? Geology, assuredly, does not reveal any such finely graduated organic chain, and this is one of the most obvious and plausible objections to the theory. The explanation offered lies in the extreme—the almost incredible—imperfection of the geological record. Only a small portion of the globe has been geologically explored with care, only certain classes of beings have been fossilized, and the number, both of specimens and species yet discovered, is absolutely as nothing compared with the number which must have passed away during even a single formation. The Malay Archipelago is about the size of Europe, and, therefore, equals in area the formations best known to us; its present condition represents that of Europe, while its strata were being deposited; its fauna and flora are among the richest on the globe, yet, even if all the

species were to be collected which ever lived there, how imperfectly would they represent the natural history of the world! Only few of these are preserved at all, and most of these in an imperfect manner; moreover, subsidence being almost necessary for the accumulation of rich deposits, great intervals of time must have elapsed between successive formations, so that, during periods of elevation, when variation would be most frequent, the record is least perfect. Moreover, single formations have not been continuously deposited; the duration of specific forms probably exceeds that of each formation; migrations have largely taken place; widely ranging species are most variable, and oftenest give rise to new species; varieties have been at first local; and finally, it is probable that periods of modification are short as compared with periods of permanence. Hence we cannot find interminable varieties, and any linking variety between two forms is, of course, ranked as a distinct species, for the whole chain cannot be permanently restored. Thus the geological record is a history of the world indeed, but one imperfectly kept, and written in a changing dialect; of this history we possess the last volume only, relating to two or three countries. Of this volume, only here and there a short chapter has been preserved, and on each page only here and there a few lines. The form which this explanation necessarily takes has led to the rejoinder that it amounts to the plain concession of a lack of evidence from the geological record. Against this rejoinder, however, statements are advanced whose drift is indicated in the paragraph [in brackets] below.

Geological Succession of Organic Beings (*Distribution in Time*).—The preceding difficulties excepted, the facts of paleontology agree admirably with the theory. New species come in slowly and successively; they change in different rates and degrees; old forms pass through rarity to extinction and never reappear; dominant forms spread and vary, their descendants displacing the inferior groups, so that after long intervals of time the productions of the world appear to have changed simultaneously. The most ancient forms differ most widely from those now living yet frequently present characters intermediate between groups now widely divergent, and they resemble to a remarkable extent the embryos of the more recent and more highly specialized animals belonging to the same classes. These laws, and above all, the important law of the succession of the same types within the same areas during the later geological periods, and most notably between the Tertiary period and the present time (e.g., fossil and recent marsupials in Australia, and edentates in South America), cease to be mysterious, and become at once intelligible on the principle of inheritance, and on that alone.

[Since the publication of the *Origin of Species* (1859), paleontological research has been constantly furnishing verification of these views. The imperfection of the geological record was so far from over-estimated, that Huxley (*Science and Culture*, 1880), in comparing our present knowledge of the mammalian Tertiary fauna with that of

1859, states that the results of the investigations of Gaudry, Marsh, and Filhol, are 'as if zoologists were to become acquainted with a country hitherto unknown, as rich in novel forms of life as Brazil or s. Africa once were to Europeans.' Gaudry found the intermediate stages between civets and hyenas; Filhol disinterred still more remote ancestral carnivores; while Marsh obtained a complete series of forms intermediate between that, in some respects, most anomalous of mammals, the horse, and the simplest five-toed ungulates (see MAMMALIA). Again, the belief of Darwin that the distinctness of birds from all other vertebrates was to be accounted for by the extinction of a long line of progenitors connecting them with reptiles, was in 1859 a mere assumption; but in 1862, the long-tailed and intensely reptilian bird *Archæopteryx* (q.v.) was discovered; and in 1875 the researches of Marsh brought to light certain cretaceous birds, one (*Hesperornis*) with teeth set in a groove, the other (*Ichthyornis*) with teeth in sockets, and with bi-concave vertebræ. Besides these reptilian birds, bird-like reptiles have similarly been forthcoming, and the hypothesis of Darwin (it is claimed) is thus admirably verified. Considerable light, too, has been thrown on the pedigree of crocodiles; ammonites, trilobites, and other invertebrates have been arranged in series, while important collateral evidence is furnished by 'persistent types' such as *Ceratodus*, *Beryx*, *Nautilus*, *Lingula*, etc., which have survived—we must assume by ordinary generation—almost completely unchanged since remote geological periods. On such grounds, Huxley proceeds to claim (*op. cit.*) that 'on the evidence of paleontology, the evolution of many existing forms of animal life from their predecessors is no longer an hypothesis, but a historical fact; it is only the nature of the physiological factors which is still open to discussion.]

Geographical Distribution.—Neither the similarity nor the dissimilarity of the inhabitants of various regions, whether of land or sea, can be accounted for by differences in climate, or other physical conditions, but are related, in the most striking degree, to the absence or presence of barriers to migration between these regions. Within the same area there exists the most marked affinity among the species, though these differ from point to point. Species appear to have arisen in separate definite centres, the few apparent exceptions being accounted for by migration and dispersal, followed by climatal and geographical changes. But for a summary of our knowledge of the existing mode of distribution of organic life, and of the way in which that distribution has been effected, as well as of the very important bearing of these facts upon the theory of evolution, which they may be said indeed, more than any other class of facts, to have suggested, see GEOGRAPHICAL DISTRIBUTION.

Morphological Arguments.—The physiological and distributional lines of argument being summarized, those furnished by morphology, though not less numerous and highly important, can be only briefly outlined. These are mainly four, and are derived from (*a*) Classification, (*b*) Homologies, (*c*) Embryology, (*d*) Rudimentary Organs.

(*a*) *Classification.*—Naturalists arrange the species, genera, and families in each class, on what is called the Natural System. But what is meant by this system? Is it, after all, merely an artificial scheme for enunciating general propositions, and of placing together the forms most like each other—or does it, as many believe, reveal the plan of creation? The grand fact of classification is, that organic beings, throughout all time, are arranged in groups subordinated under other groups, individuals under varieties, and these again under species; species under genera; those under sub-families, families, and orders, and all under a few grand classes. The nature of all these relationships,—the rules followed and the difficulties met by naturalists in their classifications,—the high value set upon constant and prevalent structures, whether these be of great or little use, or, as with rudimentary organs, of no use at all; the wide opposition in value between such misleading resemblances of adaptation, as for instance the fish-like form of whales, and such characters of true affinity as are afforded by the structure of their circulatory or respiratory system—all these receive a simple and natural explanation on the view of the common descent of allied forms with modification through variation and natural selection; while it is to be noted that no other explanation has ever even been attempted. The element of descent, too, is already used in linking all the sexes, ages, forms, and varieties of the same species, widely though these (e.g., *cirripedes*, etc.) may differ from each other in structure; and we have only to extend it to understand the meaning and origin of the Natural System.

(*b*) *Homology.*—The members of the same class, independently of their habits of life, resemble each other in their general plan of organization; thus, the hand of man, the digging-paw of the mole, the leg of the horse, the paddle of the porpoise, and the wing of the bat, all are constructed on the same pattern, bone corresponding to bone; and similarly with the hind limb. Again, the mouths of insects are of innumerable varieties of form and use—witness the long spiral trunk of a moth, and the great jaws of a beetle —yet these are formed by modifications of an upper lip, mandibles, and two pairs of maxillæ. And so it is with the limbs of crustaceans, or the flowers of plants; in fact, with the organs of every class of beings.

This *conformity to type* is 'powerfully suggestive of true relationship, of inheritance from a common ancestor;' it admits, in short, as no one indeed denies, of a simple explanation in terms of the evolutionary theory, and thus strengthens that theory not a little. It has been attempted to explain this unity of plan in two other ways—first, by assuming it due to utility, which is negatived by the facts, since organs of identical use (e.g., the wings of a bird and those of a butterfly) very frequently do not conform to the same type at all; secondly, by attributing it to a unity of design, which unity, however, (*a*) instead of being always maintained as on the theory it should be, is not unfrequently quite lost in highly specialized forms; and which,

even if it always existed, (*b*) would directly suggest the unity of descent, the design thus serving only to mislead the anatomist.

Serial Homology, too, has to be accounted for—that unity of type which is found on comparing the different parts and organs in the same individual, so that the wonderfully complex and varied jaws and legs of a lobster, or the widely different leaves—sepals, petals, stamens, and pistils of a flower, are all found to be modifications, respectively of a simple limb, and of a simple leaf organ. Not only are such metamorphoses apparent on comparison, but they can be actually observed to occur during the development of each individual; is then the term metamorphosis to have a mere metaphorical meaning when applied to the species, or has it not actually arisen in past time, through the natural selection and transmission of advantageous variations?

(*c*) *Development.*—It has been already indicated that the serially homologous parts in the same individual are alike during an early embryonic period, as are also the homologous organs in animals which, like bat, horse, and porpoise, may be widely differentiated in adult life. So closely, too, do the embryos of the most distinct species belonging to the same class resemble each other, that even Von Baer was unable to distinguish whether two unlabelled specimens were lizards, birds, or mammals. This law of embryonic resemblance holds very widely, e.g., young crustaceans. The embryo often retains within the egg or womb structures which are of no service to it, either at that or at a later period of life, like the transitory gill-arches of birds or mammals; while, on the other hand, larvæ which, like those of insects, have to provide for their own wants, undergo complete secondary adaptation to the surrounding conditions. The process of development goes from the general to the special, thus there is generally an advance in organization. In peculiar conditions, however, degeneration may occur. All these facts are readily explained on the principle of successive slight variations not necessarily or generally supervening very early in life, and being inherited at a corresponding period; and it is thus in the highest degree probable that most embryonic stages show us more or less completely the progenitor of the group in its adult state; and embryology thus rises greatly in interest (see DEVELOPMENT OF THE EMBRYO).

(*d*) *Rudimentary Organs.*—Rudimentary, atrophied, and aborted organs, bearing the plain stamp of inutility, and so extremely common that it is impossible to name a higher animal in which none occurs. The mammæ of male mammals, the hindlegs of boas, the wings of many birds, or the teeth of fetal whales, and the upper incisors of unborn calves, are familiar instances. Such organs are intelligible on the evolutionary theory, and have not been explained on any other.

Recapitulation and conclusion.—After tersely summing up the preceding mass of evidence, Darwin concludes by pointing out (*a*) that the theory of evolution by natural selection is no more inimical to religion than that of gravi-

tation, to which the same objection was strongly raised; (*b*) its revolutionary influence on the study of all departments of natural history; (*c*) on psychology (q.v.); (*d*) on the origin of man and his history (see DESCENT OF MAN); (*e*) on our theories of future progress.

Envoy.—'It is interesting to contemplate a tangled bank clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent on each other in so complex a manner, have all been produced by laws acting around us. These laws, taken in the largest sense, being growth with reproduction; inheritance, which is almost implied by reproduction; variability from the indirect and direct action of the conditions of life, and from use and disuse; a ratio of increase so high as to lead to a struggle for life, and as a consequence to natural selection, entailing divergence of character and the extinction of less improved forms. Thus, from the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows. There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms, or into one; and that, while this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.'

DAR'WIN MOUNT: elevation of nearly 7,000 ft. on the s.w. side of King Charles' South Land, Tierra del Fuego.

DARWIN SOUND, is the portion of the sea near the Mount.

DASCHILLIDÆ, n. plu. *dăs-sĭl'lĭ-dē* [Gr. *daskillos*, the name of a fish]: family of pentamerous beetles; chief genera: *Dascillus*, *Cyphon*, and *Helodes*. DASCILLUS, *-lŭs*, is the typical genus.

DASH, v. *dăsh* [imitation of the sound of a blow, the beating of the waves upon the shore, etc.: Bav. *dossen*, to sound as heavy rain, rushing brooks, etc.: Dan, *daske*, to slap: Sw. *daska*, to drub]: to strike with suddenness or violence; to throw water suddenly; to mix or adulterate; to blot out; to scatter; to rush or strike with suddenness; to break or rush through with violence; to overwhelm; to destroy, as hopes; to confound: N. a striking together of two bodies; collision; a slight addition; a rushing or onset; a sudden stroke, flourish, or parade; in *writing or printing*, a mark thus (—); in *music*, thus ('), over a note. DASH'ING, imp.: ADJ. bold; showy; spirited; adorned with finery. DASHED, pp. *dăsht*. DASH-BOARD, a board on the forepart of a vehicle to prevent water, mud, or snow being thrown upon the persons in it by the heels of the horses; a splash-board. TO CUT A DASH: see CUT 2.

DASHKOV, *dâsh'kof*, Princess EKATERINA ROMANOVA: 1144–1810; daughter of Count Vorontsov. From her earliest youth, she received a careful training. She was an inti-

mate friend of the Empress Catharine II., and one of the heads of the conspiracy formed against Peter III., the success of which secured the throne to Catharine. Soon afterward quarrelling with Catharine, she obtained permission to travel, and visited Germany, England, France, and Italy, where she made the acquaintance of many learned men (among others, Garrick, Dr. Blair, and Dr. Robertson). The empress and she were reconciled to each other, and the princess was appointed director of the Acad. of Arts and sciences; and in 1783, pres. of the Russian Acad., established at her own suggestion in imitation of the French *Academie*. On the death of Catharine, 1796, she was deprived of her offices, and ordered by Paul III. to retire to her estates at Novgorod. She died at Moscow. Besides several comedies and occasional magazine-papers, the Princess D. was mainly instrumental in inducing the Russian Acad. to draw up a dictionary of the Russian language, which was completed in 12 years. The princess herself assigned the various letters of the alphabet to different scholars, took three herself, and superintended the execution of the whole. Her very interesting memoirs were published by Mrs. W. Bradford (two vols. Lond. 1840).

DASS, *dâs*, PETTER: 1646–1708; b. Isle of Nord Herö, Norway: poet. He studied in Bergen Univ., was ordained a Lutheran priest 1672, was under-chaplain at Nesne till 1681, and resident chaplain till 1689, and was then given the living of Alstahoug, the most important in the n. of Norway. In 1700 he desired to resign his living to his son Anders D., but was not permitted; in 1704, however, the son became his father's chaplain, and Petter found more leisure for poetical compositions. His writings had an extensive circulation in MS. form, and few of them were printed in his life time. They abounded in queer turns of thought, and fine homely fancies. His best known poem, a description of the Nordland province, its attractions and business interests, bears the title of *The Trumpet of Nordland*, is full of humor, fancy, and erudition, and was published 1739. His *Norwegian Song of the Valley* was published 1696, and *Spiritual Pastimes* 1711. He is remembered as the father of Norwegian poetry.

DASTARD, n. *dăs'tĕrd* [Icel. *dust*, a blow; *dœstr*, exhausted, breathless: *ard*, is the Dut. *aerd*, inborn or native quality; also Ger. *art*, nature, quality—and *dast*, the radical part, may be the figurative application of *dash* or *daze*, to stun, to confound: F. *ard;* Goth. *hardus;* Ger. *hart*, hard: *ard*, in F. denotes intensity as a postfix]: one who meanly shrinks from danger; a coward; a poltroon; ADJ. cowardly. DAS'TARDLY, ad. *-lĭ*, cowardly; mean; timorous. DAS'TARDIZE, v. *-dīz*, to make cowardly. DAS'TARDI'ZING, imp. DAS'TARDIZED, pp. *-dīzd*. DAS'TARDLINESS, n. DAS'TARDNESS, n. mean fear; cowardliness. DAS'TARDY, n. *-tĕr-dĭ*, base timidity; cowardliness.

DASYA, *dăs-ĭ-a:* genus of the red algæ or sea weed, belonging to the *Thallogens* class and *Rhodomelaceæ* order, cellular in structure, and esteemed among the most beautiful of cryptogamous plants. The spores are red and pear-shaped. Nearly a dozen species of D. are found in the waters of the United States, and seven in the British Islands.

DASYANTHOS, n. *dăs-ĭ-ăn'thŏs* [Gr. *dasus,* thick, hairy; *anthos,* a flower]: genus of plants belonging to the order *Ericaceæ;* natives of the Cape of Good Hope.

DASYCLADEÆ, *dăs-ĭ-klā'dē-ē* [Gr. *dasus,* shaggy; *klodos,* a young shoot or branch of a tree]: tribe of algæ arranged by Kützing under his sub-order *Cœloblasteæ.* DASYCLA'DUS, n. *-dŭs,* genus of algæ, typical of Kützing's tribe *Dasycladeæ.*

DASYGASTREÆ, *dăs-ĭ-găs'trē-ē* [Gr. *dasus,* shaggy; *gastēr, gastros,* belly]: little group of bees instituted by Cuvier, in which the abdomen of the female is generally furnished with a silky brush. It ranks under the *Apides,* is distinguished from the *Andrœnides,* and includes the genera *Megachile, Osmira,* etc.

DASYMETER, n. *dăs-ĭm'ĕt-ėr* [Gr. *dasus,* thick, dense; *metron,* a measure]: instrument for weighing gases.

DASYORNIS, n. *dăs-ĭ-or'nĭs* [Gr. *dasus,* thick; *ornis,* a bird]: genus of birds belonging to the *Merulidæ,* or thrush family. They are natives of s. Australia.

DASYPELTIDÆ, n. plu. *dăs-ĭ-pĕl'tĭ-dē* [Gr. *dasus,* thick; *peltē,* a shield; L. suf. *-idæ*]: family of serpents, of which dasypeltis is the type. DASYPEL'TIS, *-tĭs,* genus of serpents destitute of teeth.

DASYPODA, n. *dăs-ĭp'od-a* [Gr. *dasus,* thick; *pous,* a foot]: genus of bees, family *Anthophila.*

DASYPUS, n. *dăs'ĭ-pŭs* [Gr. *dasus,* rough, hairy; *pous,* a foot]: the zoological term for a genus or armadillos, in allusion to the soles of their feet being covered with strong hairs. DASYPODIDÆ, *dăs-ĭp-ŏd-ĭdē,* small family of dentate animals, including the Armadillos: see ARMADILLO.

DASYSTES, n. *dăs-ĭs'tēz* [Gr., hairness]: in *entom.,* genus of coleoptera belonging to the family *Cleridæ;* in *physiol.,* hairiness; an unusual or extraordinary growth of hair on any part not usually covered by it.

DASYURE, n. *dăs'-ūr* [Gr. *dasus.* hairy; *oura,* a tail], (*Dasyu'rus*): a genus of carnivorous marsupial quadrupeds, nearly allied to the opossums; but differing from them in having only eight incisors in the upper, and six in the lower jaw, and only twelve molars in each jaw; also in the tail being everywhere covered with long hairs, and not prehensile; in the hinder thumb being reduced to a mere tubercle, or lacking; and in the important anatomical character of the want of a cœcum. All the species are Australian. The URSINE D., or ursine opossum (*D. ursinus*), was very abundant in the north of Van Diemen's Land, when first colonized, and very destructive to sheep and poultry. It is about the size of a badger, of a stout form, with a tail

half as long as the body; the body and tail covered with coarse black hair, marked with white bands. It burrows in the ground. It is very fierce and untamable, and is called sometimes the native Devil. The spotted-tailed Dasyure (*D. macrourus*) is about as large as a cat, has a tail fully as long as the body, is of a rich brown color with white spots, and as well as a rather smaller species (*D. Mougii*), the *wild cat* of the colonists is very destructive to poultry in Van Diemen's Land The Dasyure is the survivor of the fossil forms found in Tertiary strata in South America, and elsewhere; and is allied to the opossum. The hind and fore legs are about equal in length, and the toes are furnished with claws; the long hairy tails are not prehensile. The dasyures are chiefly strong, fierce creatures of cat-like propensities, whose depredations have caused heavy losses in farming and ranching districts, so that the colonists of Australasia, more especially those of Tasmania, have nearly exterminated them, by persistent effort. Among them we find the Tasmanian zebra-wolf (*Thylacinus cynocephalus*), a wolf-like creature, rather smaller than the common wolf, with short fur, a long smooth tail, and rounded ears. Its color is brownish and it is barred at the hinder portion of the back and the roots of the tail with dark stripes. It prowls about by night, making raids upon unguarded sheep-folds. By day, it skulks in caverns among the rocks. Perhaps the most interesting of the small Dasyures, is the banded ant-eater (*Myrme cobius fasciatus*) found in western and southern Australia. It is a reddish brown in color, banded posteriorly with white; is about the size of a squirrel, and has a long protrusile tongue for gathering its insect food. It is considered as a practically unmodified representative of certain extinct marsupials found in the Secondary rocks of Europe. It lives in sandy plains, where it finds food in plenty. Other species, small as rats and mice, and living chiefly on insects, birds, eggs, etc., are found in the genus *Phascogale*, and allied genera; and the jerboa-like creature (*Antechinomys laniger*) constitutes another genus, of a single species. It is native to Queensland and New South Wales, but is very rare. See MARSUPIALS.

DATA, n. plu. *dā′tă* [mid. L. *data*, a date—from L. *data*, things given—from *datum*, a thing given, the time and place of writing]: things given, admitted, or known, by which to find things unknown; known or admitted facts or truths. DA′TUM, n. *-tŭm*, something given as a standard. DATUM-LINE, the base-line from which surface levels and heights are reckoned as a fixed standard. DATARIA, n. *dă-tā′rĭ-ă*, the papal chancery at Rome from which all bulls are dated and issued. DATARY, n. *dā′tĕr-ĭ*, the officer of this chancery, sometimes called a chancellor: he is assisted by a *pro* and *sub* datary. DATE, n. *dāt*, the day, month, and year in which anything was given or executed; the time of any event or transaction; period; age; era; epoch: V. to write, fix, or note the time of any event, etc.; to reckon; to begin. DA′TING, imp. DA′TED, pp. DATE′LESS, a. without a date.

DATE: time, period: see under DATA.

DATE, n. *dāt* [F. *datte;* OF. *date,* the date—from L. *dac'tylus,* a finger—from the form of the fruit]: the fruit of the date-palm tree: see DATE PALM.

DATE: the precise time at which a document was written, or an avent happend. The importance of accurately ascertaining the date of an event or writing is very obvious, but the difficulty sometimes involved is not so apparent. It might be thought that, at least in modern times, where the day of the month and year are authoritatively set down, there can be no room for any further question; but it is not so. If, for instance, we refer to a newspaper of the reign of Queen Anne, we shall see the *Amsterdam Gazette* of Feb. 22 translated in the *London Gazette* of Feb. 13, and abridged in the *Edinburgh Courant* of Feb. 19, all of the same year, 1705. And this is but one of several seeming inconsistencies or contradictions of the same sort.

In the first place, the difference of the two *styles,* old and new, by which dates are reckoned may cause a discrepancy of 10, 11, or 12 days, according to the century to which the date belongs. Until 1582, there was but one style or calendar throughout Europe; but in that year, Pope Gregory XIII. introduced the 'new style' or 'Gregorian calendar,' which at once corrected the long accumulated errors of the old method of computing time, by declaring 1582, Oct. 5 to be Oct. 15, or, in other words, by striking 10 days out of the almanac of that year. The new style was adopted generally in Rom. Cath. countries. Most Protestant countries, on the other hand, continued for a longer or shorter period to use the 'old style,' or 'Julian calendar.' It is necessary, therefore, in dealing critically with dates after 1582, to ascertain what 'style' was in use at the time and the place in question. This, in not a few cases, may call for some inquiry; but generally, the following table will serve to show when the chief states of Europe adopted the new style.

Year.	Country.
1582.	Great part of Italy, France, Lorraine, Portugal, Spain, Holland, and the greater part of the Netherlands.
1584.	The Roman Catholic parts of Germany and of Switzerland.
1587.	Hungary.
1586.	Poland.
1682.	The city of Strasburg.
1700.	The Protestant parts of Germany and of Switzerland, Guelders, Zutphen, Utrecht, Friesland, Groningen, and Overyssel.
1749 or 1751	Tuscany.
1752.	Great Britain and Ireland; British American colonies, soon thereafter.
1753.	Sweden.

In Russia and Greece, the old style is still followed, and it obtains generally in the East. Thus, what was 1879, Jan. 12, at Paris, London, and New York, was 1878, Dec. 31, at Athens and St. Petersburg.

But difference of old and new *style* is not the only cause of perplexity in dates. Countries using the same style, and therefore agreeing as to the day of the *month,* may

differ as to the *year* to which they refer an event. Thus, the beheading of King Charles I. was reckoned, both in England and in Scotland, to have taken place Jan. 30; but while England held the year to be 1648, Scotland held it to be 1649. The cause of this discrepancy was the difference which obtained as to the beginning of the year. By the English, the year was held to begin Mar. 25; by the Scots, Jan. 1. It becomes necessary, therefore, in considering dates, to keep in view not only the style which was used, but the day on which the year was accounted to commence. There was much variation in this respect, not only between one country and another, but even in the same country between one time and another, as well as between its different provinces at the same time. The new years' days most commonly used were the Nativity or Christmas (Dec. 25), the Circumcision (Jan. 1), the Annunciation or Lady Day (Mar. 25), and the Resurrection or Easter (a movable date). Jan. 1 was adopted as the commencement of the year by France 1563, by Scotland 1600, by England 1752. In England, the inconvenience of dating by a different year from most of the other great European states had been so generally felt, that for some time before the new mode of computation was sanctioned by act of parliament, dates falling between Jan. 1 and Mar. 24 were commonly expressed in both ways, thus: $170\frac{6}{7}$, or 1706–7, Feb. 2, the lower or last figure indicating the year according to the present reckoning.

The above relates to dates where both the year and the date of the month are set down in figures. But in ancient writing, even where the year is expressed in figures, nothing is more common than to indicate the day of the month only by reference to some festival or other peculiarity in the service of the church. Thus, an English letter of the latter part of the 15th c. is dated in this way: 'Written at Paston, in haste, the Wednesday next after *Deus qui errantibus*;' that is, the first Wednesday after the Sunday third after Easter, on which day that portion of the church service which is called the *introit* begins with the words *Deus qui errantibus*. So, again, as late as 1610, the battle of Weissenburg, near Prague, is described by the contemporary chroniclers as fought 'upon the Sunday on which the church sings *Reddite quæ sunt Cæsaris Cæsari*;' that is, the Sunday twenty-second after Pentecost, which, in the year referred to, fell upon Nov. 8. A still more common way of dating was by reference to a saint's day. Thus, the English parliament which met at Westminster, 1399, Oct. 6, is described in the contemporary record as meeting 'on Monday, the Feast of St. Faith the Virgin;' and the Scottish parliament which met at Scone, 1318, Dec. 3, as meeting 'on the Sunday next after the feast of St. Andrew the Apostle.' In order, therefore, to interpret all this class of dates—and it is a very large one—recourse must be had to the calendar and service books of the church, or to the 'glossaries of dates' and 'catalogues of saints' days' which antiquaries have compiled from them.

For centuries it was more common to date by the year

of the king's reign than by the year of our Lord. The risk of error in reducing this way of computation to that now in use is such, that in Rymer's *Fœdera*, a great collection of English state papers, printed at the public expense in the beginning of the 18th c., many documents of all the reigns from Richard I. to Edward IV. are misplaced by a whole year. These mistakes arose chiefly from insufficient inquiry as to the day from which the king dated his reign. This was assumed to be from the day of his predecessor's death, but in point of fact the early England sovereigns dated their reign only from the day of their coronation. Where a date, therefore, has to be ascertained by reference to a regnal year, it becomes necessary to make sure not only of the time when the king came to the throne, but of the very day from which he reckoned his reign. In the case of the popes of Rome, this inquiry is at once more than usually necessary, and more than usually troublesome, inasmuch as, until, comparatively recent times, scarcely any two of them in immediate succession dated or computed on the same principle. Not a few of them, indeed, adopted different computations at different times of their reign. Thus, Pius II., during his pontificate of six years (1458–64), commenced the year sometimes Dec. 25, sometimes Jan. 1, sometimes Mar. 25. Some popes, again, dated from the day of their election; others, from the day of their consecration or coronation. Nor is it only in interpreting regnal years into modern chronology that there is a chance of error; there is proof that occasionally the regnal years were wrongly computed at the time by the kings themselves, or rather by the officers who wrote their charters. Thus, for example, it has been discovered that from the time that King David II. of Scotland returned from captivity in 1357, the year given as that of his reign is one year short of the truth. In dealing with regnal years, there is yet another risk of mistake to be guarded against. Until the 16th c. it was not common for kings to distinguish themselves by numbers from their predecessors of the same name. In order, therefore, to discriminate one from another, charters or other deeds of the English Henries and Edwards, or the Scottish Roberts and Jameses, recourse must be had to such tests as the character of the writing, its seal, its style and language, and above all, the names of the persons enumerated in it.

With no other help than is to be gained from such tests, the antiquary is often called on to fix the date of a charter, containing no reference to the year of our Lord, the year of the king's reign, the year of the pope's pontificate, or any other measure of time. If the persons mentioned in the deed be men of note, he may be able to ascertain its date to a year, a month, or even a day; on the other hand, if they are obscure, he may be unable to reduce the date within a narrower range than 50 or even 100 years.

The skill of the antiquary is not unfrequently put to the proof in another way. Dates were recorded often by reference only to an event of the time. Thus, one leaf of the Scottish statute-book contains two acts of parliament, with

no more explicit record of their date than that the one was passed 'at Aberdeen in Lent next after the coming in Scotland of Vivian the Legate of the Apostolic See;' and that the other was passing at Stirling 'on the Monday next before the feast of St. Margaret the Maiden next after the first coronation of Philip king of the French': an examination of contemporary chronicles fixes the date of one of these statutes to 1177; of the other, to 1180.

DATE LINE: an imaginary line drawn on the earth's surface from n. to s., on one side of which it is to-day and on the other side to-morrow. When vessels pass this line a day is repeated or dropped. Its course is as follows: Beginning at the North Pole it runs through Bering Strait, slants w. to clear the long peninsula formed by the Aleutian chain of islands, and thus allows them the same day as the United State. It then turns e. to the 180th meridian and drops s., keeping far to the e. of the Philippine Islands till it reaches the latitude of the Fiji group. As these and proximate islands belong to England and carry on trade chiefly with Australia, the date line takes an abrupt turn to the e. so as not to interfere with local commerce. This fixing of time brings about strange results, particularly in the oriental possessions of the United States. To-day in New York is always to-morrow in the Philippines, and only the severing of a cable prevented the news of the battle at Manila from reaching the United States the day before the engagement.

DATE OF DEED: see DEED.

DATE PALM (*Phœnix*): genus of palms, the most important species of which is the common DATE PALM, the *Palm Tree* of Scripture (*Ph. dactylifera*), native of n. Africa, s. w. Asia, and parts of India, and which has been brought into cultivation in the south of Europe, and might certainly be introduced with advantage into the south of the United States, and many warm parts of America and Australia. The stem, which is straight and simple, reaches a height of 30–60 ft. and bears a head of 40–80 glaucous pinnated leaves, 8–10 ft. long, with lanceolate, acuminated leaflets, very much closed up, and a number of branching spadices, each of which on the female tree bears in general 180–500 fruits (dates, *dactyli*). A bunch of dates weighs 20 or 25 pounds. This is one of the most important and useful of all the palms, and is indispensable to millions of the human race, for the food which it supplies. In Egypt and the other countries on the n. coast of Africa, in Persia, and in Arabia, dates form the principal food, and date palms the principal wealth of the people. The fleshy part of the fruit contains 58 per cent. of sugar, accompanied by pectine, gum, etc. The main ingredient, therefore, in a dietetic point of view, is the sugar. The fruit is eaten either fresh or dried, and in the latter state becomes an article of commerce. Cakes of dates pounded and kneaded together, and so solid as to be cut with a hatchet, are the

store of food provided for African caravans on their journey through the Sahara. A liquor resembling wine is made from dates by fermentation, and also a kind of vinegar. In Persia, an ardent spirit is distilled from dates. The soft pith at the summit of the palm stem, along with the young leaves not yet unfolded, are eaten under the name of *palm cabbage*, and the undeveloped panicles of flowers also form an article of food to the Persians and Arabs. The liquor called *palm wine* is prepared by fermentation from the sap of the palm, the top being cut off, and a hollow scooped out, in which the sap collects. Three or four quarts are obtained daily from a single palm for ten days or a fortnight. The quantity afterward dimishes, till the tree becomes quite dried up. Many of the inhabitants of n. Africa use the roasted date stones or seeds as a substitute for coffee, for which purpose the seeds of the *Phœnix raclinata* also are employed in s. Africa. The seeds or stones of dates are in many places ground for the oil after-

Date Palm.

ward obtained from them by expression, and the remaining paste or cake is given as food to cattle. From leaf-stalks of the common D. P., all kinds of basket and wicker work are made, and walking-sticks, fans, etc. The leaves themselves are made into bags, mats, etc.; the fibres of the web-like integuments at the base of their stalks into cordage. The wood is used for building, fences, etc.—The TODDY PALM of n. India, or wild date palm (*Ph. sylvestris*), so nearly resembles this species, that it is doubtful if it is distinct. In some places, the trees present a curiously distorted and zigzag appearance, from the practice of yearly tapping the alternate sides for the sap or *toddy*. The

incision is just below the crown, and slopes upward and inward; a vessel is hung below the wound, and the juice conducted into it by a little piece of bamboo. It forms a grateful and wholesome beverage; readily also fermenting into palm wine, and by distillation yielding *Arrack* (q.v.); while if boiled down without being allowed to ferment, it yields the saccharine sirup called *jaggery*, from four pounds of which one pound of sugar is obtained, a single tree producing about seven or eight pounds of sugar annually. The operation of tapping for toddy spoils the fruit of the tree, which is small and much inferior to the African date. It is, however, eaten.—Another species, *Ph. paludosa*, most gregarious of Indian palms, growing only six or eight ft. high, covers the whole landscape of the Sunderbunds with the liveliest verdure. *Ph. acaulis*, *Ph. farinifera*, and *P. spinosa*, are three closely allied dwarf species; the first grows in the driest soils in the damp valleys of the Himalaya to 5,000 ft. above the sea.

DATE PLUM (*Diospyros*): genus of plants of the nat. ord. *Ebenaceæ*, consisting of deciduous trees, whose fruit is a globose berry, natives of warm or temperate climates. The black heart-wood of some species is EBONY (q. v.), and the hard timber of others is known as IRONWOOD. Some are valued for their fruit. The COMMON DATE PLUM, *or* PISHAMIN, called also the EUROPEAN LOTUS and the DATE OF TREBISOND (*D. Lotus*), is a tree of 20–40 ft. in height, with oblong shining leaves and small reddish white flowers, native of the coasts of the Caspian Sea, Mauritania, etc., but cultivated and naturalized in s. Europe. Its fruit is of the size of a cherry, and in favorable climates larger, yellow, sweet, and astringent. It is eaten when overripe, like the medlar, or is used for conserves. The tree bears fruit abundantly in the neighborhood of London, but is somewhat tender in the climate of Britain, and its fruit more austere than in southern regions. This fruit has been supposed by some to be the *Lotus* (q.v.) of the Lotophagi. The VIRGINIAN DATE PLUM, or PERSIMMON (*D. Virginiana*), is a tree of 30–60 ft. high, with ovate oblong leaves and pale-yellow flowers, native of the southern United States of where one tree often yields several bushels of fruit. The fruit is about the size of a bullace, reddish, with six to eight oval seeds. It is not palatable till mellowed by frost, and is sweet and astringent. A kind of beer or cider and an ardent spirit are made from it.—The *Mabola* (*D. Mabola*) is cultivated as a fruit-tree in the isle of France. Its fruit is about the size of a quince, and has a very agreeable flavor.—The *Kaki* (*D. Kaki*), called sometimes the KEG-FIG, is a Japanese tree, kept in some green-houses in France and England. The sweetmeat called *Figuescaques* is made from this fruit in France. The fruit resembles a plum. It is occasionally brought from China as a dried sweetmeat.—The fruit of some other species of *Diospyros* is edible; as that of *D. tecandra*, a large yellow berry, which, notwithstanding a disagreeable smell, is sold in the markets of Cochin-China.

DATHOLITE, n. *dăth'ō-līt* [*dathos* for Gr. *thŏlŏs*, turbid,

from its want of transparency; *lithos*, a stone]: or DATOLITE, n. *dăt′ō-līt* [Gr. *datĕŏmai*, I divide—because of its division into granular portions]: mineral of a grayish or greenish white color, sometimes yellowish white, occurring both massive and crystallized in rhombic prisms, the edges and angles of which are cut off by planes. It is composed of boracic acid, silica, and lime, with a little water. It has been found both in gneiss and in trap rocks. The Salisbury Crags and Corstorphine Hill, near Edinburgh, are localities for datholite.

DATISCACEÆ, *dā-tĭs-kā′sē-ē:* small nat. ord. of plants, allied to *Begoniaceæ*, and consisting of herbs and trees, natives chiefly of the temperate parts of the N. Hemisphere. *Datisca cannabina*, a plant much resembling hemp in its general appearance, a native of Crete, possesses very marked tonic properties. It contains also an amylaceous substance, called *Datiscin*, resembling inuline. It affords a yellow dye. It can be extracted from the leaves and roots by exhausting with alcohol, concentrating, adding water, filtering from a resin, crystallizing and purifying the glucoside so obtained. When pure it forms colorless silky needles, which are readily soluble in alcohol, sparingly in ether and in water, and have a bitter taste. It has feeble acid properties, and gives yellow compounds with lead and tin which can be used as dyes. When boiled with dilute acids it is resolved into sugar and *datiscetin*, which crystallizes readily.

DATISI, n. *dâ-tīs′-ī*, or *dâ-tēs′-ĕ* [a word without etymological meaning but designed to have its letters symbolic]: in logic, the third mode in the third figure of syllogisms. See SYLLOGISM AND MOOD IN LOGIC.

DATIVE, a. *dā′tĭv* [L. *dātivus*, that is given, dative; *datus*, given]: the case of nouns that usually follows verbs expressing giving, or an act directed to an object; this relation in Eng. is expressed by *to* or *for:* see DECLENSION.

DATIVE, a. *dā′tĭv:* see EXECUTOR DATIVE.

DATNIA, n. *dăt′nĭ-a:* genus of fishes, sub-family *Helotinæ*, family *Percidæ*, or Perches.

DATUM, n. *dā′tum;* pl. *data* (*-ta′*); [L. *datum*, a gift, a present (ML. also, an allowance, concession, tribute), prop. neut. of *datus*, pp. of *dare*, give]: that which is given, a fact; that which is treated for the purpose of a particular inquiry as an original fact; a point of departure or of reference for inference; data of consciousness or of knowledge; the original elements or bases of knowledge behind which reasoning cannot go and which are accepted or believed as a basis for all further inquiry.

DATURA, *dă-tū′ră*, a genus of plants of the potato family (*Solanaceæ*). It contains about 125 species, widely distributed. The genus is represented in the United States by coarse weeds naturalized from tropical America. Jamestown or Jimson weed (*D. stramonium*) is said to have received its name from a poisoning that occurred from its use by the settlers of Jamestown, Va. It is

also called thorn-apple. It is found in waste places from the eastern seaboard west to Minnesota and Texas. The purple thorn-apple or purple stramonium (*D. tatula*) is found throughout the same region as the Jimson weed, but the entire-leaved thorn-apple (*D. metel*) does not grow far from the Atlantic coast. An extract from these plants is used in medicine. When taken internally it is a powerful narcotic; medically it is used in mania, convulsions, epilepsy, tic-doulereux, etc.

DATURINE, n. *dă-tū′rin* [from Ar. name *tătōrah*]: a white, crystalline, poisonous compound or alkaloid, obtained from all the species of thorn-appple—e. g., the *Datūra strămōnĭŭm*. DATURA: see THORN-APPLE.

DAUB, n. *dawb* [from *dab*, an imitation of the sound made by throwing down a lump of something moist: OF. *dauber*, to plaster—from L. *dealbārĕ*, to whitewash—from *de*, down; *albus*, white: Gael. *dob*, to plaster]: a coarse painting: V. to smear or cover with any soft matter; to plaster; to paint coarsely; to lay or put on without taste. DAUB′ING, imp. DAUBED, pp. *dawbd*. DAUB′ER, n. one who. DAUB′Y, a. -ĭ, slimy; adhesive.

DAUBAN, JULES JOSEPH, *zhûl zhō′zĕf dō-bân*, French painter: b. Paris 1822, May 31. He was a pupil of Auguste Debay. His taste led him to historical and religious subjects, and his compositions, severe in design and of a great simplicity in the accessories, are somewhat cold and sober in color. He became director of the museum and the School of Fine Arts in Angers in 1849, received a medal in 1864 and the decoration of the Legion of Honor in 1868. Among his works are: *Louis XI. presenting Guillaume de Cerizay as Mayor of Anjou* (1861); *Reception of a Stranger by the Trappists* (1864), *Luxembourg Museum; Trappists Exchanging the Kiss of Peace before Communion* (1865), Museum of Angers; *Madame Roland Going to the Revolutionary Tribunal* (1869); *Fra Angelico da Fiesole* (1873); and several portraits and decorative paintings.

DAUBENTON, *dō-bŏng-tōng′*, LOUIS JEAN MARIE: 1716, May 29—1800, Jan. 1; b. Montbar, Burgundy: French naturalist. His father wished him to be an ecclesiastic, and sent him to acquire a knowledge of theology at the Sorbonne in Paris, but Daubenton had no inclination for this study, and turned to medicine and anatomy. In 1741, after he had taken his degree at Rheims, he returned to Montbar to practice his profession. In the following year his old school-fellow, the Comte de Buffon, induced him to come to Paris, and assist him in the preparation of his great work on natural history. For this office Daubenton was admirably qualified. The sobriety of his understanding, the scrupulous care with which he pursued the smallest investigations, his perseverance and industry, were in complete contrast to the impatient spirit and rapid generalizing of his brilliant coadjutor, and enabled him to correct and moderate some of Buffon's hasty theories, as well as to substantially enrich the work with a multitude of new and important facts rela-

tive to the anatomy of animals. Unfortunately, Buffon, who was exceedingly jealous, allowed himself to be influenced unfavorably in regard to D., on account of the high estimation in which the Parisian savans generally held him. The result was an estrangement (ultimately reconciled), and D., who had contributed richly to the first 15 vols. of the *Histoire Naturelle*, ceased to have further connection with the work, and the labors of others ill-supplied the lack. In 1778, D. was made prof. of natural history in the College of Medicine. During the Revolution, the convention appointed him prof. of mineralogy in the Museum of National History.

Besides his labors in connection with the *Histoire Naturelle*, D. contributed largely to the first *Encyclopédie*. In the Memoirs of the Académie des Sciences, and in those of the Société de Médecine, are to be found a multitude of his most interesting and valuable papers. Cuvier composed a notice of D.'s life and works for the Memoirs of the Institute.

DAUBENY, *dōb'nĭ* or *dawb'nĭ*, CHARLES GILES BRIDLE, M.D., F.R.S.: prof. of botany and chemistry in the Univ. of Oxford; d. 1867, Dec. 12. His field was the elucidation of natural phenomena by chemical science. His attention was early directed to the chemistry of volcanic action, and one of his first productions was *An Essay on the Geological and Chemical Phenomena of Volcanoes* (Oxford 1824): followed by his great work, *A Description of Active and Extinct Volcanoes* (Lond. 1826), applying the principles of chemistry to the phenomena produced by volcanic changes. In 1837, he visited America for scientific purposes, and published the results of his observations in two vols., *Notice of the Thermal Springs of N. America* (1838) and *Sketch of the Geology of N. America*. His *Introduction to the Atomic Theory* (1831), *Lectures on Agriculture* (1841) and *Lectures on Climate* (1862), are very valuable.

DAUBER, *daw'bĕr:* wasp of the *Sphegidæ* family, order *Pelopœus;* found in various parts of America, and named D. and mud-wasp because the female collects lumps of mud in her mouth and builds her nest with them in a series of cells. She then lays one egg in each cell, puts in it a paralyzed spider, and seals the opening. When the egg hatches, the grub finds the spider to be food sufficient to last till it is strong enough to burst its cell and enter on an independent career.

DAUBERY, n. *daw'bĕr-ĭ*, or DAUBRY, n. *dawb'rĭ* [Ger. *zaubcrei*, magic, witchcraft]: in *OE.*, enchantment; witchcraft; artful magic tricks.

D'AUBIGNE: see MERLE D'AUBIGNE.

DAU'CUS: see CABROT.

DAUDET: *dō-dā'*, ALPHONSE: one of the most popular of modern French novelists; b. Nimes, in Provence, 1840. Much of his childhood was spent at Lyons, amid somewhat dismal circumstances, which he has touchingly described in his first long story, *Le Petit chose*. After a short bond-

age as an ill-paid usher in a small provincial college, he went to Paris still a youth, and gradually worked his way to his acknowledged place among the most charming story-tellers of the day. His earlier works were *Lettres de mon Moulin, Contes du Lundi,* the amusing history of *Tartarin de Tarascon,* and the delightful series of letters entitled *Robert Helmont.* These works revealed to Frenchmen a genius of rare quality and interest, full of brightness and warmth, with all the spontaneity and loquacity of the Provençal, and a wonderful observer of all external things, lightened up by the ray of fancy and the tremor of feeling. Some of his later works, especially *Jack* and *Le Nabab,* show distinct traces of the influence of Dickens in the overdone pathos and intensification of some of the situations. His great successes in his longer works have been portraits of known individuals. D. 1897.

DAUGHTER, n. *daw'ter* [Dut. *dochter;* Ger. *tochter;* Gr. *thug'atēr,* a daughter: Skr. *duhitri,* a daughter—from *duh,* to milk: Lap. *daktar;* AS. *dohter,* a daughter]: a female child; female offspring; a term of affection for a female. DAUGHTER-IN-LAW, n. a son's wife. DAUGH'TERLY, a. *-lĭ,* dutiful. DAUGH'TERLINESS, n.

DAUGHTERS OF THE AMERICAN REVOLUTION: a soc. organized in Wash. D. C., 1890, Oct. 11. Any woman is eligible to membership who is over 18 years and a descendant from an ancestor who "with unfailing loyalty rendered material aid to the cause of independence as a soldier, sailor, or a civil officer in one of the several Colonies, provided applicant shall be acceptable to the soc."

DAUGHTERS OF THE CONFEDERACY: an association organized in Nashville, Tenn., 1894, Sept. 10, and composed of the wives, widows, mothers, sisters, and lineal descendants of men who served honorably in the army and navy of the Southern States, or who gave personal service to the Confederate cause, or who served in the civil service of the Confederate States.

DAUGHTERS OF THE HOLLAND DAMES: a colonial society of women incorporated in New York for the purpose of erecting a memorial to commemorate the early Dutch period of colonial history, and to preserve and collect historical documents relating to the same.

DAUGHTERS OF THE REVOLUTION: a patriotic assoc. organized in N. Y. city, 1891, Aug. 20; composed only of "women who are lineal descendants of an ancestor who actually assisted in the establishment of Amer. independence, becoming thereby liable to conviction of treason against the Gov. of Gt. Britain, but remaining always loyal to the authority of the Colonies."

DAUK, n.: see DAWK.

DAUK, n. *dawk:* a provincial term for a stratum of tough sandy clay.

DAULATABAD': see DOWLATABAD.

DAUN, *down,* LEOPOLD JOSEF MARIA, Graf VON: commander-in-chief of the imperial troops during the Seven

Years' War: 1705, Sep. 25—1766, Feb. 5; b. Vienna; son of Wirich Philipp Lorenz von D., a distinguished officer in the Austrian service. Entering his father's regiment, he acquired reputation during the Turkish campaigns, 1737–39. The Austrian wars of succession gave opportunity for enhancing his fame for valor and prudence. After the peace with Prussia 1745, D. became master-gen. of the ordnance, fought against the French in the Netherlands 1746–48, and in 1754 received the dignity of field-marshal. Before this, he had, in spite of many obstacles, introduced into the imperial army a new military system, and reorganized the Military Acad. at Vienna. At the commencement of the Seven Years' War, he commanded the army of Moravia in 1757, and neutralized the defeat of the Austrians under General Broune near Prague, by driving Friedrich II., who had beleaguered that city, as far as Collin, and forcing the king, after a hard-fought battle, to evacuate Bohemia. 1758, Oct. 14, he gained another victory over Friedrich, at Hochkirch, and but for the too late arrival of the Prince of Baden-Durlach with reinforcements, would probably have annihilated the Prussian army. At Maxen 1759, Nov. 25, he compelled Fink, the Prussian general, with 11,000 men, to surrender. After this he gained no important successes, as Friedrich began to understand his tactics, and to conduct his campaigns accordingly.

DAUNG, *dawng:* tract within the presidency of Bombay; 950 sq. m. extending in n. lat. from 20° 22′ to 21° 5′, and in e. long. from 73° 28′ to 73° 52′. It is subdivided into several petty states, the whole under one feudal chief, styled the Rajah of Daung. The country is valuable principally on account of its teak-forests, which are rented by the British government. Pop. 70,300.

DAUNT, v. *dânt* [F. *dompter,* to tame—from OF. *danter* and *donter,* to tame: Scot. *dant,* to subdue: L. *domĭtārĕ,* to tame—*lit.* to subdue by fear]: to dishearten; to discourage; to check by fear; to dismay. DAUNT'ING, imp. DAUNT'ED, pp. DAUNT'LESS, a. bold; fearless; not timid. DAUNT'LESSLY, ad. *-lĭ.* DAUNT'LESSNESS, n. fearlessness; intrepidity.

DAUPHIN, n. *daw'fĭn* [OF. *daulphin*—from L. and Gr. *delphin,* a dolphin, a star]: originally the name or title of the lord of *Dauphiné*—said to have been so named from wearing a *dolphin* as his cognizance; a title of the eldest son of the King of France from 1349 to the revolution in 1830, assumed on the acquisition of Dauphiné by France; his wife was called DAUPH'INESS.—The last sovereign lord of the province of Dauphiné, Humbert II., dying childless (1349), bequeathed his possessions to Charles of Valois, grandson of Phillippe VI. of France, on condition that the heir-apparent to the throne of France should bear the title of D. of Vienne, and govern the province. Louis IX. conferred on the D. almost sovereign rights; but after his time these were gradually abridged, until Dauphiné was placed under the same laŵs as the rest of the kingdom, and the title became merely

honorary. After the revolution of 1830, it was abolished altogether.

DAUPHINE, *dō-fē-nā':* formerly a frontier province in the south-west of France, now comprises the depts. Drôme, Isère, and Hautes Alpes. After the fall of the Roman empire, D. formed the southern-most part of the kingdom of Burgundy. It then passed under the dominion of the Franks, and after the dismemberment of the Carlovingian monarchy, it became a portion of the new Burgundian kingdom of Arles. It then passed by legacy into the possession of the German emperor 1032, and remained united with Germany till the middle of the 14th c., when it was presented to France by the last of the lords of Dauphiné: see DAUPHIN. The old rulers of the land bore the title of Dauphin (probably from having the figure of a *dolphin* for their crest), and the name was afterward transferred to the district.

DAUPHIN'S CROWN: circle of gold set round with eight *fleurs de lis*, closed at the top with four dolphins, their tails conjoined in a *fleur de lis*.

DAUW, *daw* (*Equus Burchellii*): South African quadruped, regarded as intermediate between the zebra and the quagga, and called sometimes *Zebra of the Plains*, and by the Cape colonists *Bonte Quagga*, or *Striped Quagga*. In the language of the Bechuanas, it is *Peetsi*. It is found in numerous herds in the wide plains north of the Orange river, is rather larger than the zebra, and of more robust figure; of a light bay color, the belly, legs and tail white; the face, head, and body striped with black; the tail is tufted to near the root. The hoofs are much less concave beneath than those of the zebra, and are thus adapted to the plains, as those of the zebra are to the rough surface of the mountains. The D. is less easily domesticated than the quagga, but more so than the zebra.—This, or a very similar species, is found as far n. as Congo and the Galla country.

DAVALLIA, n. *da-văl'lĭ-a* [named after Edmund *Davall*, a Swiss botanist]: genus of *Polypodiaceæ*, the typical and only one of the sub-tribe DAVALLIE'Æ, *-ē'ē*, tribe *Polypodeæ*.

D'AVENANT, *dăv'ĕn-ant*, Sir WILLIAM: English poet and playwright: 1605 (or 6)—1668, Apr. 7; b. Oxford, where his father kept the Crown Inn—a house at which Shakespeare was in the habid of staying on his journeys between London and Stratford. D., while still a child, had a great admiration for Shakespeare, and when only 10 years of age, on the occasion of Shakespeare's death, the precocious boy penned an ode *In Remembrance of Master William Shakespeare*. He began to write for the stage 1628, and 10 years afterward, on the death of Ben Jonson, he was appointed poet-laureate. He afterward became manager of Drury Lane Theatre, but entering into the intrigues of the civil war, was apprehended, and cast into the Tower. He escaped, however, to France, and returning, distinguished himself so much in the cause of the royalists, that he was knighted by Charles after the battle of Gloucester. D. a

second time fell into difficulties, and was confined in the Tower for two years, when he was released, as is said, on the intercession of Milton. Once more free, he set about establishing a theatre, and succeeded. After the Restoration, he was favored by royal patronage, and continued to write and superintend the performance of plays until his death. D'Avenant's epic, entitled *Gondibert*, a poem of about 6,000 lines, is now almost wholly forgotten.

CHARLES D'AVENANT, 1656–1714, son of Sir William D'Avenant, distinguished himself as a writer on political economy and finance. His chief works are—*An Essay upon Ways and Means of Supplying the War* (1695); *Discourse on the Public Revenues and the Trade of England* (1698); *A Discourse upon Grants* (1700), etc.

DAVENPORT, n. *dāv'ĕn-pōrt* [said to be after the Countess of *Devonport*]; a lady's drawing-room writing-table with drawers underneath.

DAVENPORT, *dăv-ĕn-pōrt*, city, county seat of Scott co., Iowa, on the Mississippi river, and opposite the cities of Rock Island and Moline, Ill. Its business blocks occupy the level land extending about three miles along the river, many of their foundations resting on strata of lime rock underlying the city; the residence portion extending back on gentle slopes and extensive table lands. The city has one hundred and fifty miles of streets, thirty miles of which are paved. An extensive street car system connects with Rock Island, Moline, and the government island of one thousand acres, on which is situated the mammoth U. S. Arsenal and Armory. Davenport has thirty-three churches, fifteen of the finest modern public school buildings, three hospitals, and a magnificent public library. It has beautiful parks, and many romantic and picturesque drives. The city is at the lower end of the upper Mississippi rapids fourteen miles in extent, which will eventually give enormous power for manufacturing, lighting, and other purposes. Railroads extend in a dozen different directions everywhere into sections of the richest country. The river traffic is extensive and growing. Steam boats carrying passengers and freight run both ways from the city every day in summer.

History, Government, etc.—Davenport was founded in 1835, and named after Col. George L. Davenport, for many years a prominent resident on the island. The next year, when six or seven houses had been built, Antoine Le Claire was made postmaster. In 1838, the town was incorporated, and a city charter secured in 1851. The city is governed by a mayor and city council, elected biennially.

Industries.—In 1905 there were 174 manufacturing establishments, with a capital of $13,063,504, employing an average of 4372 persons at an annual cost of $2,303,242; the value of the products being $13,695,978. On the government island nearly half as many more men are employed, most of them residing in Davenport, manufacturing small arms and other government supplies.

Public Institutions, Buildings, Etc.—The Davenport Academy of Sciences, established forty years ago, has a large and valuable scientific library and collection of relics of former civilizations, and publishes regularly a volume of proceedings. St. Ambrose college for young men, St. Catherine's Hall, and Immaculate Conception academy for girls, a Catholic orphanage, the Cook Home for old ladies, and Fejervary Home for old men, Turner Hall and Masonic temple are notable buildings. The State Orphan's Home is also located here, and the city has episcopal sees of the Catholic and Episcopal churches. Pop. (1900), 35,254; (1910) 43,028.

DAVENPORT, Edward Loomis: 1814, Nov. 15—1877, Sept. 1; b. Boston: actor. He made his first appearance at the Lion Theatre, Providence, R. I., when 22 years old, playing Parson Will to Junius Brutus Booth's Sir Giles Overreach in *A New Way to Pay Old Debts*. After a season at the Bowery Theatre, New York, he appeared at the Walnut Street Theatre, Philadelphia, as Count Montalban in *The Honeymoon*, 1838, and then confined himself to Boston till 1847, when he accompanied Mrs. Anna Cora Mowatt to England and played Claude Melnotte to her Pauline in the large cities, and supported Macready two seasons. In 1854 he returned to the United States; 1859 became manager of the Howard Athenæum, Boston, and 1869 of the Chestnut Street Theatre, Philadelphia; 1873 was at Wood's Museum, New York, and 1875–6 played the part of Brutus in the long run of *Julius Cæsar* at Booth's Theatre. He married Fanny E. Vining, daughter of the manager of the Haymarket Theatre, London, by whom he had six children, all of whom went on the stage. Of these, Fanny Davenport is the best known in the amusement world.

DAVENPORT, Eugene: American agriculturist and educator: b. Woodland, Mich., 1856, June 20. He was professor of agriculture in the Michigan Agricultural College in 1889–91, and president of the agricultural college at Sao Paulo, Brazil, in 1891–2. In 1895–1901 he was professor of animal husbandry in the University of Illinois. In 1901, September, he became dean of the College of Agriculture, of that institution, director of the Agricultural Experiment Station, and professor of thremmatology. He has contributed to the agricultural press and the bulletins of experiment stations.

DAVENPORT, Fanny Lily Gypsy, American actress: b. London 1850, April 10; d. Duxbury, Mass., 1898, Sept. 26. Her first appearance on the stage was at the Howard Athenæum, in Boston, then under the management of her father, E. L. Davenport (q.v.). She played during her career in the theatres of all the large cities in the United States. Her most noted rôles were in *La Tosca, Giaconda, Fedora*, and *Cleopatra*.

DAVENPORT, Franklin, American legislator: b. Philadelphia, Pa.; d. Woodbury, N. J., about 1829. He studied

law, and having been admitted to the bar, practiced at Woodbury, N. J. In the Revolution he was a captain of artillery in Newcomb's New Jersey brigade, and also stationed at Fort Mifflin. In 1794, at the time of the 'Whiskey Insurrection,' he marched with the troops to Pittsburg as colonel of the New Jersey line. He was United States senator 1798–9, and a representative 1799–1801.

DAVENPORT, Herbert Joseph, American educator and publicist: b. Wilmington, Vt., 1861, Aug. 10. He was educated at the University of South Dakota and the Harvard Law School; was principal of the high school at Lincoln, Neb, and is now assistant professor of economics in the University of Chicago. He has published: *Outlines of Economic Theory* (1896); *Elementary Economic Theory* (1898); *Principles of Grammar* (with Emerson, 1898).

DAVENPORT, Henry Kallock, American naval officer: b. Savannah, Ga., 1820, Dec. 10; d. Franzensbad, Bohemia, 1872, Aug. 18. He entered the navy in 1838 and in 1844, as passed midshipman, became connected with the coast survey. In 1849–53 he was in the mail-steamship service, subsequently was on sea duty and in 1856 participated in the capture of the Barrier forts, Canton River, China. During the Civil War he commanded the steamer Hetzel in 1861–4, being in 1862–4 senior officer in command of the sounds of North Carolina. Promoted captain in 1868, he was assigned to the command of the Congress of the European squadron in 1870.

DAVENPORT, Homer Calvin, American artist and cartoonist: b. Silverton, Ore., 1867, March 8. Without schooling or art education and after many vicissitudes as jockey, circus clown, and railroad stoker, he was employed by the San Francisco *Examiner* in 1892 and since then has been engaged upon the staff of the *American and Journal*, the *World*, and the *Evening Mail* of New York. He has also appeared as a lyceum lecturer. He has published: *Davenport's Cartoons, The Bell of Silverton and Other Short Stories of Oregon, The Dollar or the Man.*

DAVENPORT, John: 1597–1670, Mar. 15; b. Coventry, England: first minister of New Haven, Conn. He was educated at Oxford Univ., entered the Anglican priesthood, was appointed chaplain in Hilton Castle, and minister of St. Stephen's Church, London; became a non-conformist, resigned his charge and removed to Holland 1633, and withdrew from the Established Church 1635. He aided in securing the patent of the Mass. colony, and immigrated to Boston 1637; was received with much consideration and tendered a seat in the synod; but, disapproving the religious controversies then pending, went to Quinipiac and founded the colony of New Haven 1638. He hid the regicides Goffe and Whalley in his house, preached in New Haven 30 years, and succeeded John Wilson as pastor of the First Church, Boston, 1668, Dec. 9.

DAVID, *dâ-vēd':* town of recent origin, on the left bank of a river of the same name in Panama, one of the Federal

provinces of the United States of Colombia (formerly New Granada), on the frontier of Costa Rica, Central America; lat. 8° 23′ n., and long. 82° 27′ w. It is separated by a comparatively narrow part of the Isthmus of Darien from the lagoon of Chiriqui, an inlet of the Caribbean Sea, which, with sufficient depth for large ships, penetrates nearly 50 m. into the land toward the Pacific Ocean. To this position the place appears to owe its prosperity. It exports rice, coffee, hides, turtle, shells, and gold-dust. Its climate is understood to be comparatively salubrious. Pop. upward of 4,000.

DAVID, *dā′vĭd* (Heb. 'Beloved'), King of Israel: B.C. 1085–1015 (according to the common reckoning); b. Bethlehem; eighth and youngest son of Jesse, of the tribe of Judah. He was probably educated in one of the schools of the prophets. He first publicly signalized himself by slaying Goliath of Gath, a gigantic Philistine, who had 'defied the armies of Israel.' Previously, he had acquired repute as a skilful harper, and had subdued by his music the paroxysms of insanity which afflicted King Saul at certain seasons. The prophet Samuel, by divine command, anointed D. king during the lifetime of Saul, who soon began to regard him as a dangerous enemy, and persecuted him. A kind of intermittent war between the two was the consequence, in which D. was often reduced to great straits. At first, he was simply in the position of a guerilla chief, and his comrades were mainly persons in desperate circumstances—'all who were in distress, in debt, or discontented.' Latterly, he lived among the Philistines as one of themselves, and from the Philistine prince of Gath obtained a present of the strong fortress of Ziklag, after which he was joined by a class very different from his original outlaws—men of consideration, and tried warriors, from various tribes. The contest between him and Saul now assumed the proportions of a civil war. It ended only at the death of Saul, whereupon D. ascended the throne of Judah, with the city of Hebron as his capital. The other tribes elected Ishbosheth, a son of Saul, to be their king, after whose violent death D. first acquired possession of the entire kingdom, B.C. 1055, over which he ruled until his death. His first undertaking in his new office was a war against the Jebusites. He took their chief city, Jerusalem, and made it his residence, as also the centre of the religious worship of the Hebrews. Subsequently, he subjugated the Philistines, Amalekites, Edomites, Moabites, Ammonites, and, after a long war, the Syrians. His kingdom now stretched from the Euphrates to the Mediterranean, and from Syria to the Red Sea, and contained a population of 5,000,000. He fostered navigation and trade, especially with Tyre, and sought to instruct the Hebrews in the arts. No less careful was he of the religion of his countrymen. He divided the priests and Levites into classes, and appointed sacred singers and poets for the musical service of God. 'Law and justice likewise received improvement at his hands, through the institution of higher and lower judiciary courts, while he secured the stability of his power by the formation of a standing army. He was a warrior king

of far-famed prowess. Besides this, there were 12 governors over the tribes of Israel. D. was not, however, without his trials. Two conspiracies were formed against him in his own family, and though both failed, they greatly imbittered his life. His sensual excesses, the constant offense of oriental kings,—occasional lapses in him—also drove him into acts of criminality, the memory of which haunted him through life. 'My sin is continually before me.' Yet we cannot help recognizing in the man, in spite of all his infirmities and sins, a sincerity of moral feeling rarely equalled in history. His passions might lead him astray, but they never blinded his conscience. From his evil wanderings he returned with utmost humiliation, deep repentance, and new purpose of uprightness. The crime once committed, D. never tried to find excuses for it, and so blunt the edge of his deserved misery. The psalms which he has left reveal to us the soul of the royal poet wrestling with a host of black troubles, fears, and doubts, out of which, however, as from the seething bosom of chaos, there emerges at last a 'full-orbed faith,' made perfect by suffering and much tribulation. There has never been trust in God more clear, unwavering, and tender, than that expressed in the 23d Psalm. It is this many-sided experience of life that has made the 'Psalms of David' (though it is uncertain who made the collection, which contains many not written by David himself) the most precious heritage of the afflicted and tried in all ages of the Christian Church. By those theologians who look upon Jewish history as having a *typical* or *allegorical* meaning as well as a literal one, D. is regarded as a type of Christ.

DAVID I. (often called St. David), King of Scotland: abt. 1080–1153, May 24; youngest of the six sons of King Malcolm Ceanmohr, by his second wife, the Anglo Saxon princess, St. Margaret (q.v.). During the fierce struggle for the Scottish crown, which followed the death of his father 1093, the youthful D. seems to have found refuge in England, with his sister, Eadgyth or Matilda, who, in 1100, married Henry I., King of England. The residence of D. at the court of this accomplished monarch appears to have been prolonged for several years, and the assertion of a contemporary English annalist may be credited, that 'it freed him from the rust of Scottish barbarity.'

In 1107, his elder brother, Alexander, succeeded to the throne; and D. became prince of Cumbria, a territory which comprised what are now the shires of Cumberland, Dumfries, Roxburgh, Selkirk, Peebles, Lanark, Dumbarton, Renfrew, and Ayr, and was held of the English king by the heir of the king of the Scots. With this great principality, he seems to have held lands in Lothian; and by his marriage in 1110 with Matilda, widow of the Earl of Northampton, he acquired possession of that earldom, together with a claim to the rest of the vast domains of her father, Waltheof, Earl of Huntingdon, of Northampton, and of Northumberland. The first acts of D., as prince of Cumbria, were to restore the fallen bishopric of Glasgow, and to bring a colony of Benedictine monks from the newly-

founded monastery of Tiron, in France, and to plant them beside his forest castle of Selkirk. This was in 1113; and even thus early, as his charters show, he had gathered round him the Bruces, the Lindsays, the Morvilles, the Umfrayvilles, the Percies, the Riddels, and other Anglo-Norman knights, through whose help he was to effect such a momentous change in Scotland.

In 1124, he succeeded to the Scottish throne, on the death of his brother, King Alexander I. That prince had had to fight for his crown against the heirs of the old Celtic dynasties, supported by the wild tribes of the north and the west. They renewed the struggle with his successor, first in 1130, when they advanced almost to the gates of Brechin; and again about 20 years later, when they appear to have been encountered on the plains of Murray. On both occasions, the Anglo-Norman chivalry with which D. had garrisoned the southern provinces, gave him decisive, but far from easy victories. He was less fortunate in his wars beyond the Tweed. In 1127, he had sworn, with the other great barons of England, to maintain the right of his niece, Matilda, as heir of the English crown, should her father, Henry I., die without male issue of his own body. The event thus contemplated came to pass 1135; and when Stephen mounted the English throne, D. took arms in behalf of Matilda and subdued almost all the country to the south of Durham. Peace was restored by the grant of the earldom of Huntingdon, and the promise of the earldom of Northumberland, to D.'s son Henry, then in his 20th year. But the war was soon resumed; and in 1138, the king of Scots, deserted by Bruce and others of his Anglo-Norman vassals, was signally defeated in 'the Battle of the Standard,' near Northallerton. The next year, a second peace was concluded between the two kings, when the promised earldom of Northumberland was bestowed on D.'s son Henry. In 1141, the Scottish king marched into England for the third time to assert the rights of Matilda. He was a third time defeated, and regained his own country with difficulty.

The rest of his reign was devoted to the accomplishment of the great revolution which had been begun by his father, King Malcolm, and his mother, St. Margaret, and continued by his brothers, King Edgar and King Alexander—the establishment in Scotland of the civilization which obtained in England. By building castles, he secured the peace and safety of the country; by erecting burghs, he promoted its trade, shipping, and manufactures, and laid the foundations of its freedom; by endowing bishopries and monasteries, he provided homes for the only men of learning and enlightenment known in his time, when they were the schoolmasters, statesmen, lawyers, physicians, bankers, engineers, artists, builders, agriculturists, of the age.

King D. died at Carlisle. His son Henry had died in the previous June, and he was succeeded by his grandson, Malcolm, then in his 12th year. Some pleasing traits of King D.'s admirable personal character are preserved in the *Eulogium Davidis Regis Scotorum,* by his friend St. Ailred,

DAVID, BY MICHAEL ANGELO.

abbot of Rievaux, printed in Pinkerton's *Vitæ Antiquæ Sanctorum Scotiæ* (Lond. 1789). Other instructive materials for the king's life are supplied by the same writer in his tract *De Bello Standardi*, printed (with other contemporary accounts of the battle) in Twysden's *Historiæ Anglicanæ Scriptores Decem* (Lond. 1652); and by Joceline of Furnes in his *Vita S. Walthevi* (abbot of Melrose, and D.'s stepson), printed by the Bollandists in the *Acta Sanctorum*, and in a less perfect state in Fordun's *Scotichronicon*. The remains of D.'s legislation, including the interesting code of the *Leges Burgorum*, have been carefully collected in the first volume of *The Acts of the Parliaments of Scotland* (Edin. 1844).

King D. is often called St. David. He was never formally canonized, or placed in the roll of saints of the Rom. Cath. Church; but his name was inserted in the calendar prefixed to King Charles's Prayer-book for Scotland, printed at Edinburgh 1637.

DAVID II.: see BRUCE.

DAVID, or DEWI, SAINT: patron saint of Wales: according to tradition, b. abt. the end of the 5th or beginning of the 6th c.; d. abt. 601; son of the Prince of Ceretica (Cardiganshire). Having resolved on a religious life, he spent the customary probationary period in solitude, after which he commenced preaching. He built a chapel at Glastonbury, and founded twelve monasteries, the chief of which was at Menevia, in the vale of Ross. At the synod of Brevy, in Cardiganshire, 519, St. D. showed himself a strong opponent of the Pelagian heresy. Subsequently, he became abp. of Caerleon-upon-Usk, but transferred his see to Menevia, now called St. Davids, where he died. St. D. was celebrated for eloquence and success in conversion. His life was written by Ricemarch, bp. of St. Davids (d. abt. 1099). The *Historia S. Davidis*, by Giraldus Cambrensis, written about 1175, published in Wharton's *Anglia Sacra* is little more than an abridgment of Ricemarch's work.

DAVID, *dâ-vēd'*, FELICIEN: 1810, Mar. 8—1876, Aug. 29; b. Cadenet, dept. of Vaucluse: French musical composer. He was at first a chorister in the cathedral of Aix, and at the age of 20 entered the Paris Conservatoire. He became an ardent disciple of St. Simon, afterward of Enfantin; and finally, on the break-up of the brotherhood attempted at Ménilmontant 1832, he betook himself, with 11 of his fellow-dreamers, to the East, there to realize his theory of life in undisturbed peace. The little knot of enthusiasts reached Constantinople, whence they made their way to Smyrna and Cairo. As they had no means, they suffered greatly from want, sickness, and ill-usage. The plague forced them to flee from Egypt to the coasts of Syria. It is said that they dragged a piano with them over the sands, and refreshed themselves with its music, when they rested on their toilsome march. Returning to France, D. remained in obscurity till 1844, when he brought out at the Conservatoire his *Désert*, a grand *Ode symphonie*, as he called it, the words of which were furnished by his friend and fellow-wanderer, Auguste Colin. It success was sudden and complete. D. was declared a

master at once, and his *Désert* was performed in all the theatres. Subsequently, he travelled through Belgium and Germany, everywhere greeted with applause. Less successful works were—*Moïse sur le Sinaï* (1846), *Christophe Colombe*, and *Le Paradis* (1847), and *La Perle du Brésil* (1851), *Herculaneum* (1859), and *Lalla Rookh* (1862). He was appointed an officer of the Legion of Honor 1862; and librarian to the Paris Conservatoire de Musique 1869.

DAVID, Jacques Louis: 1748, Aug. 30—1825, Dec. 29; b. Paris: founder of the modern French school of painting, and, according to his countrymen, 'the regenerator of French art.' He studied under Vien both at Paris and Rome. His first efforts by no means indicated the latent tendencies of his mind. His devotion to the classic style of art was first perceptible to any extent after his second visit to Rome 1784, where he executed his *Horatii*. In 1787, he painted *The Death of Socrates;* in 1788, *The Loves of Paris and Helen;* and in 1789, *Brutus Condemning his Son*. As a member of the convention, he voted for the death of Louis XVI; he was a Jacobin, and a member of the committee of public safety, in all the atrocities of which he shared, and, in consequence, was twice imprisoned after the fall of Robespierre. To the period of the Revolution belong his *Murder of Marat*, *Murder of Pelletier*, and his *Oath taken in the Tennis Court*. His genius culminated in the *Rape of the Sabines* (1799). In 1804, Napoleon appointed him his first painter, and gave him a number of commissions, and among his best and most celebrated works are several historic portraits of the emperor, such as *Napoleon Crossing the Alps*. As one of the regicides of Louis XVI., he was banished in 1816 from France, and died in exile at Brussels. David's latter style is more free and natural than his earlier, in which his figures, though manifesting quite an ideal beauty of form, have all the rigidity of sculpture and lack vital expression. Among his paintings during banishment were —*Love and Psyche*, *The Wrath of Achilles*, and *Mars Disarmed by Venus*.

DAVID, Laurent Oliver: Canadian journalist and author: b. Sault au Recollet, Que. 1840, March 24; educated at Ste Therése College and admitted to the bar 1864; practiced law and journalism and took part in politics for some years; elected to legislature 1886–90 and in 1892 appointed city clerk of Montreal. He has written: *Biographies et Portraits* (1876); *Les Héros de Chateauguay* (1883); *Les Patriotes de* 1837–8 (1884); *Mes Contemporains* (1894); *Les deux Papineau* (1896); *Le Clergé Canadien: Sa Mission et Son Oeuvre* (1896); *Laurier et Son Temps* (1905).

DAVID, Pierre Jean (commonly called David d'Angers): 1789, Mar. 12—1856, Jan. 5; b. Angers: French sculptor. He went to Paris when very young, and studied art under his namesake, Jacques Louis David (q.v.). In 1811, his *Death of Epaminondas* obtained the first prize for sculpture given by the Acad. of Arts. In 1816, he returned

to France. A statue of the Great Condé, which he executed about this time, established his reputation. In 1826, he was named a member of the Institute, and appointed a prof. in the School of the Fine Arts. Two years later, he went to Germany, where he executed a colossal bust of Goethe for the library at Weimar; and in a second tour 1834 similar busts of Dannecker, Schelling, Tieck, and Rauch, as well as many portrait statues of life-size. During the July revolution, David had fought in the ranks of the people, and in consequence, he was employed by the new government to execute the frontispiece of the Pantheon 1835. He finished it 1837. By many it is considered his *chef-d'œuvre*. In 1848, the well-known republicanism of the artist procured him a seat in the constituent assembly. After the *coup-d'état* he was sent into exile and went to Greece, but soon returned to France. The principal of his many works are—*A Young Girl at the Tomb of Botzaris*, *A. Monument of Bonchamp*, *A Virgin at the Foot of the Cross*, a *Saint John*, statues of General Foy, Marshal St. Cyr, Corneille, Fénelon, and Racine, and busts of La Fayette, Béranger, Rossini, Chateaubriand, Balzac, and Casimir Delavigne. There is great force of expression in many of David's works, but the drawing and execution are not always accurate.

DAVIDISTS, *dā'vĭd-ĭsts:* sect, followers of David of Dinant. Their doctrines were condemned by the Synod of Paris 1209. They held that real existence pertained to the Deity alone.

DAVIDISTS, or David Georgians: sect, followers of David George, or Joris: see Joris, David.

DAVIDS, St: ancient and decayed episcopal city, in the w. of Pembrokeshire, the westmost town in Wales. It is on the streamlet Allan, a mile from its mouth, near St. David's Head, on the n. side of St. Bride's Bay. It has been the seat of a bishopric since about 519, when St David transferred the archbishop's see to St. David (before called Mynyw, and by the Romans Menevia) from Caerleon. It was in the Middle Ages a large city—the great resort of pilgrims of St. David's shrine; it is now a small village, with only a few good houses, besides those of the clergy. It has a fine cathedral, and splendid remains of religious houses, episcopal palace, and St. Mary's College (founded by John of Gaunt), within a high embattled wall nearly a mile in circuit. These were several times pillaged and burned by the Danes and others during the 9th and two following centuries. The cathedral, founded in 1180, on the site of the monastery of St. David, is cruciform. Its dimensions in the interior are: length, 290 ft.; breadth, 76; nave, 124; choir, 80; transept, 120; central tower, 127 ft. high. It contains a curious movable pulpit, an elaborately worked bishop's throne; the tomb of the Earl of Richmond, father of Henry VII.; and also sepulchral monuments of the early bishops of the see, as Giraldus Cambrensis, Anselm, etc. Among the former bishops were Laud, Bull, South, and Horsley; and a very recent

occupant of the see was Connon Thirlwall, historian of Greece. The cathedral establishment includes a bishop, a dean, 4 canons, 5 vicars choral, and other officers residentiary, with 4 archdeacons, and 12 prebendaries, or honorary canons, non-resident. The bishop has £4,500 a year, and lives at Abergwili, near Caermarthen. The people are chiefly agricultural laborers. William the Conqueror made an offering as a pilgrim at St. David's shrine. Cairns, tumuli, holy wells, chapels, crosses, etc., abound around St. David' especially at St. David's Head, a high rugged promontory two m. n.w. of the city, and the westmost point in Wales, in lat. 51° 54′ n., and long. 5° 20′ w. Pop. (1881) 6,281; (1891) 5,803.

DAVIDSON, *dā′vĭd-son*, Lucretia Maria: 1808, Sep. 27—1825, Aug. 27; b. Plattsburg, N. Y.: poet. She began composing verses in secret when only four years old and before she could write, using print letters, and on being discovered burned all her compositions. She learned to write when seven years old, composed her earliest preserved poem, *Epitaph on a Robin*, when nine, and at twelve had read many historical and dramatic works, including Shakespeare and Goldsmith. She was sent to school when sixteen, but soon became a victim to consumption. Her preserved poems, numbering 278, were published under the title of *Amir Khan and Other Poems*, 1829, in conjunction with those of her sister, Margaret Miller Davidson, 1850, and with illustrations 1871.

DAVIDSON, Margaret Miller: 1823, Mar. 26—1838, Nov. 15; b. Plattsburg: sister of Lucretia Maria Davidson: poet. She was also precocious as a writer of verse; composed several poems when only six years old; wrote *The Tragedy of Alethia*, a drama, and privately acted in it when ten; and had the friendship and encouragement of Washington Irving, who wrote memoirs and supervised the publication of the poems of both sisters, 1850.

DAVIDSON, Samuel, Irish biblical scholar: b. near Ballymena, Ireland, 1807; d. 1898, April 1. After entering the ministry of the Presbyterian Church, he became in 1835 professor of biblical criticism and literature in the Presbyterian Theological College in Belfast. He afterward joined the Congregationalists, and was appointed, in 1842, a professor in their college in Manchester, but had later to resign owing to his advanced opinions. His works include: *Sacred Hermeneutics* (1843); *Gieseler's Ecclesiastical History* (1846); *The Ecclesiastical Polity of the New Testament* (1848); *An Introduction to the New Testament* (1848–51); *Biblical Criticism* (1852); Introduction to the Old Testament (1862); *Translation of Fürst's Hebrew Lexicon; On a Fresh Revision of the English Old Testament* (1873); *The New Testament Translated From the Critical Text of Von Tischendorf* (1875); *Canon of the Bible* (1877); *Doctrine of Last Things Contained in the New Testament* (1883).

DAVIDSON, Thomas: b. Aberdeenshire, Scotland, 1840, Oct. 25; d. Montreal, Canada, 1900, Sept. 14. After

graduating from the University of Aberdeen he moved to England where he taught for a few years in the vicinity of London. Was the leading spirit in the foundation of the London Fabian Society. Emigrated to Canada, and taught for a time in Upper Canada College. Afterwards became a citizen of the United States. Taught in the public schools of St. Louis. In his later years led the life of a wandering scholar, lecturer and free-lance. A prodigiously learned man, and ardently interested in all practical efforts to bring about social and moral reform. He early came under the influence of Rosmini. His own philosophy, based partly upon a development of Rosminian epistemology and partly upon his interpretation of the history of civilization, was one of radical and uncompromising pluralism, which he sometimes called apeirotheism. Philosophy and history alike, he held, point to one and the same goal,—the establishment of the individual in his unique integrity as completely self-dependent, master of circumstances and of his own fate, neither the creature of things nor the creature of an all-inclusive god-consciousness. Came more and more to emphasize feeling, sometimes defining the individual as a 'substantial feeling' (desire being simply the active aspect of feeling), and again as, 'the sentient unity of a sensible world.' He would avoid the subjectivism which this would seem to imply by accepting as an ultimate fact the action through desire of one individual upon another; and by introducing the conception of a moral ideal which might have objective validity although measured solely by the individual and judged by its sufficiency to satisfy his own desire. For every individual has divine-human desires, and will ultimately be satisfied with nothing less than a world of the largest possible experience that is consistent with its inner harmony. Included in his publications are: *A Short Account of the Niobe Group* (1874); *The Place of Art in Education* (1886); *Giordano Bruno, and the Relation of His Philosophy to Free Thought* (1886); a *Hand-Book to Dante, from the Italian of Scartazzini* (1887); *Prolegomena to Tennyson's In Memoriam; Aristotle and Ancient and Modern Educational Ideals, etc.*

DA'VIES, Sir JOHN: poet and statesman: 1570–1626, Dec. 7; son of a legal practitioner in Wiltshire, England. At the age of 15 he was sent to Queen's College, Oxford, where, five years later he took his degree of B. A., having spent two of these years in the Middle Temple, where he studied law. He was called to the bar 1595, but forfeited his privileges, and eventually was expelled from the Temple for certain indiscretions. He began his political career 1601. In 1603, he was sent by James I. as solicitor-gen. to Ireland, and almost immediately became attorney-general. He was called to the degree of sergeant-at-law 1606, and in the spring of the following year received knighthood. On the assembling of the Irish parliament, called 1613, Davies was chosen speaker of the house of commons. In 1620, he

took his seat in the English parliament as member for Newcastle-under-Lyne. He died suddenly of apoplexy.

As a lawyer, the character of D. is that of a man of great learning and talent. His *Reports of Cases adjudged in the King's Courts in Ireland* (1615), were the first reports of Irish cases ever published, and had a preface from the pen of D., esteemed by an old critic the best ever prefixed to a law-book. But it is as a poet that he is chiefly notable. His *Orchestra, or a Poem on Dancing* (1596), was followed by his great work, the *Nosce Teipsum, a Poem on the Soul and the Immortality thereof* (1599). His verse is elegant without being artificial, and flowing without being careless, while its compact structure is remarkable for his times. Among his miscellaneous works were *Discovery of the True Cause why Ireland was never Subdued entirely until the Reign of King James I.* (Lond. 1612), a work which has always been considered of great value to political inquirers.

DAVIES, Samuel, d.d.: 1724, Nov. 3—1761, Feb. 4; b. Summit Ridge, Del.: Presb. minister. He received a classical education, was licensed to preach 1746, ordained an evangelist and assigned to Hanover co., Va., 1747, went to England and collected funds for the college of N. J. 1753, aided in establishing the first presbytery in Va. 1755, and after being chosen twice accepted the presidency of the College of N. J., succeeding Jonathan Edwards, 1759. His sermons were published in 5 vols. (London 1767) and 3 vols. (New York 1851). He was esteemed a great pulpit orator.

DAVIESS, *dā'vĭs*, Joseph Hamilton (widely known as Jo Daviess): 1774, Mar. 4—1811, Nov. 8; b. Bedford co., Va.: lawyer. He was educated at Harrodsburg Acad., fought against the Indians 1793, studied law and began practice at Danville 1795, and attained high rank in his profession. He was said to have been the first western lawyer who ever argued a case in the U. S. supreme court, married a sister of Chief Justice Marshall, was appointed U. S. dist. atty. for Ky., and instituted proceedings against Aaron Burr (1806) for levying war on a nation with which this country was at peace. He was maj. of Ky. vols. under Gen. Harrison in the Indian war, and at Tippecanoe received a mortal wound while leaving a cav. charge, 1811, Nov. 7, and died the next day. He was eccentric in manner and dress, and author of *A View of the President's Conduct concerning the Conspiracy of* 1806 (1807).

DAVILA, *dâ'vē-lâ*, Enrico Caterino: 1576, Oct. 30—1631; b. Pieve di Sacco, in the vicinity of Padua. D., when seven years old, was taken to France for his education. At the age of 18, he entered the service of Henry IV., which he afterwards exchanged for the military service of Venice. He was shot on his way to Crema, to take command of the garrison, 1631. D. is famous for his work, *Storia delle Guerre Civili di Francia* (Venice 1630), a history comprising that eventful period from the death of Henry II., 1559, to the peace of Vervins, 1598.

DAVILLA, n. *da-vĭl'la* [named after Pedro Franco *Davila*, a Spanish naturalist]: genus of plants, ord. *Dil.*

leniaccæ. *D.* rugosa is astringent. *D. elliptica*, also astringent, furnishes the vulnerary called Sambaibinha.

DAVIS, *dā'vĭs*, CHARLES HENRY, LL.D.: 1807, Jan. 16—1877, Feb. 18; b. Boston; naval officer. He was appointed midshipman in the U. S. navy 1823, promoted past midshipman 1829, commissioned lieut. 1834, commander 1854, capt. 1861, commodore, 1862, and rear-admiral 1863. While surveying off Nantucket 1846–49, he discovered the new south shoal and several smaller ones in the track of steamers plying between New York and Boston, and New York and European ports. He was supt. of the *American Nautical Almanac* 1849–56, and again 1859; was chief of staff and flag officer at the capture of Port Royal 1861; in command of the western flotilla off Fort Pillow 1862, May; defeated a squadron of 8 Confederate iron-clads May 10; captured all the Confederate iron-clads and rams but one off Memphis, and received the surrender of that city, June. After the war he received the thanks of congress, was supt. of the naval observatory 1865–67, commander of the Brazilian squadron 1867–69, commandant of navy yard, Norfolk, 1870, and subsequently again supt. of the naval observatory.

DAVIS, DAVID, LL.D.: 1815, Mar. 9—1886, June 26; b. Cecil co., Md.; lawyer. He was educated at Kenyon College, Ohio, studied law at Lenox, Mass., and in the Yale Law School, was admitted to the bar in Ill. 1835, and began practicing at Bloomington. In 1844 he was elected a member of the legislature, 1847 of the constitutional convention, and 1848, 55, and 61, judge of the eighth state circuit. While serving his last term he was appointed a justice of the U. S. supreme court by his intimate friend Pres. Lincoln, 1862, Oct.; was elected U. S. senator to succeed Gen. Logan, 1877–83; was pres. pro tem. of the senate 1881, Oct. 13—1883, Mar. 3; and resigned just before the expiration of his term.

DAVIS, HENRY GASSAWAY: capitalist and public official; b. Baltimore, Md., 1823, Nov. 16; ————. He made a humble start in life as brakeman on a railroad, but was soon advanced to the more responsible positions of conductor and station agent. Subsequently engaging in the mercantile business at Piedmont, W. Va., he became very successful and amassed a considerable fortune, which he afterward largely increased by railroad and other enterprises. He became interested also in coal mines to a very large extent. His political affiliations were with the Democratic party, which first elected him a member of the West Virginia house of delegates, and from 1871–83 he represented his adopted state in the U. S. senate. In 1904 he was nominated for the Vice-Presidency by the Democratic National Convention at St. Louis, but failed of election.

DAVIS, HENRY WINTER, LL.D.: 1817, Aug. 16—1865, Dec. 30; b. Annapolis; lawyer. He graduated at Kenyon College, Ohio, 1837 studied law in the Univ. of Va., and began practicing in Alexandria. He removed to Baltimore 1850, became a brilliant whig orator, was elected to con-

gress from the 3d. dist. 1854 and 56, and served on the committee on ways and means. He allied himself with the national party at the dissolution of the whig party, was again elected to congress 1858, and defeated as an unconditional union candidate after the Baltimore riots 1861, declined the republican nomination for vice-pres. on the ticket with Abraham Lincoln 1860, served another term in congress, and held the chairmanship of the committee on foreign affairs 1863–65. He was a staunch supporter of the Union, and favored negro emancipation, enlistment, and suffrage.

DAVIS, JEFFERSON, LL.D.: statesman: 1808, June 3—1889, Dec. 6; b. Todd co. (then part of Christian co.), Ky.; son of a Georgia revolutionary soldier. In his infancy his father removed to Wilkinson co., Miss. At the age of 10 he left Transylvania Coll., Ky., and entered West Point Milit. Acad. He graduated 1828, was assigned to the 1st infantry, was in the Black Hawk war of 1831–2, and was promoted to 1st lieut. dragoons 1833. He resigned 1835 in order to marry the daughter of Col. Zachary Taylor, afterward president. After a few quiet years as a cotton-planter near Vicksburg, Miss., he engaged in politics 1843, was a Polk and Dallas presidential elector 1844, and was elected to congress, taking his seat 1845, Dec. He strongly opposed protective tariff, and was active in legislation preparatory to the war with Mexico. In 1846 he resigned from congress to enter the war, having been unanimously chosen col. of the 1st Miss. rifle vols. At Monterey he showed great gallantry. At Buena Vista his cool and skilful management at a critical point foiled the enemy's final attempt to break the American line. Though severely wounded, he kept to his saddle till the fight was won.

He entered the U. S. senate on appointment by the gov. of Miss., and was afterward unanimously elected by the legislature. In the senate he vigorously urged state-rights, and upheld the fugitive slave-law. He resigned his seat 1851 to enter the canvass for gov. of Miss. as candidate of the state-rights party. He was defeated, but his popularity reduced the adverse majority from more than 7,000 to about 1,000. In the presidential contest 1852 he strongly supported Franklin Pierce, who after election appointed him sec. of war. He administered this office 1853–57 with much ability, advocating revision of army regulations, introduction of the light-infantry or rifle system of tactics, substitution of iron for wood in gun-carriages, manufacture of rifled arms, and improvement of sea-coast defenses.

Re-elected to the senate for the term to end 1863, Mar. 4, he antagonized Douglas's proposal of 'popular sovereignty' and advocated instead the extension of the Missouri compromise line to the Pacific. As a speaker he was fluent and earnest, but terse. When secession was agitated he counselled preservation of the union, but with the provision that state sovereignty be maintained. After the election of Pres. Lincoln, Mr. Davis advised the slave states to prepare for resistance should usurpation be attempted from Washington; and he was a leading member of the secret caucus of southern senators at the capitol, 1861, Jan. 5, to

form the scheme of secession. In a speech in the senate, 1861, Jan. 10, he asserted the right of secession by a state, denying any federal right of coercion, and urging that the U. S. garrison be immediately withdrawn from Fort Sumter. On the previous day Mississippi had actually seceded; and when, 14 days later, he received official notice of this action by his state, he resigned his seat in the senate and went home. Before he reached home the Mississippi convention had appointed him commander-in-chief of the state army; and on Feb. 9 he was elected by the provisional congress at Montgomery, Ala., pres. of the confederate states, which office he assumed Feb. 18. In Nov. following he was without opposition elected pres. for six years, and was inaugurated 1862, Feb. 22.

From the disappointment occasioned by the losses of Fort Donelson and New Orleans, an opposition to Mr. Davis's administration sprang up in the south, which slowly increased till the day of its fall. It showed itself in demands either that the war should be prosecuted on a different plan, or that negotiations should be opened with a view to peace. His financial management was sharply censured by many; he was accused by others of favoritism in military appointments, and of intermeddling with commanders in the field; he was charged with being untrue to his great doctrine of state-sovereignty because, as a party at the south alleged, he had declared his intention to apply coercion to any member of the confederacy under certain conditions. The final result shows that the secession cause was a mistake—a lost cause from the beginning; but it is difficult to see how any leader could have shown ability or devotedness in its behalf exceeding his. It is evident that whatever may have been his misjudgments, he was the animating soul of the confederacy. His determined attitude throughout the war is seen in his proclamation of 1862, Dec. 2, retaliatory to Pres. Lincoln's proclamation of emancipation: in this document he declared Gen. B. F. Butler, then holding New Orleans, an outlaw to be hanged as soon as captured, and ordered that all commissioned officers serving under him, or found serving in company with slaves, should be treated 'as robbers and criminals deserving death.' But this was a threat not executed. His steadfastness of purpose is illustrated by his proclamation issued at Danville, 1865, Apr. 5, when he was a fugitive from his capital, in which he says: 'Relieved from the necessity of guarding particular points, our army will be free to move from point to point, to strike the enemy in detail far from his base.' Five weeks afterward he was a prisoner, and his army had ceased to exist.

The evacuation of Richmond was announced to him by Gen. Lee as a military necessity, 1865, Apr. 2. On that Sunday evening D. with his cabinet and personal staff left the city. On Apr. 9, the fleeing and half-famished remnant of Lee's brave army, enveloped by Gen. Grant's forces, surrendered—the two armies instantly fraternizing and sharing rations like old friends. To this surrender D. did not consent, having merely proposed terms for an armis-

tice and then fled southward without awaiting a reply. The sending of this proposal, however, had opened the way between Grant and Lee for negotiations of surrender. While temporarily encamped near Irwinsville, Ga., D. was captured with his wife and escort by a Union cavalry force, 1865, May 10. He was taken to Fortress Monroe, where he was confined as a prisoner of war two years, being indicted for treason by a grand jury in the U. S. dist. court of Va. at Norfolk, 1866, May 8. A charge of complicity in the assassination of Pres. Lincoln had been made, but was dropped. He was brought before the court at Richmond on a writ of *habeas corpus* 1867, May 13, and was admitted to bail in the sum of $100,000 on a bond signed by Horace Greeley, Gerrit Smith, and Cornelius Vanderbilt. He was never brought to trial: in 1868, Dec., the U. S. govt. entered a *nolle prosequi* in his case, and he was included among those pardoned in the general amnesty of 1868, Dec. 25. An attempt, 1876, to except him from amnesty on the ground of his permitting the atrocities on prisoners in the war, failed. On his release he made his home in Memphis, Tenn., becoming pres. of a life-insurance co. In 1879 he inherited an estate at Beauvoir, Miss., from Mrs. Dorsey, an old family friend and an admirer of his principles, and resided there in semi-retirement, making occasional addresses at dedications of Confederate monuments. He never retracted his theories on slavery and secession. At his death at the age of 81 in New Orleans where he was visiting, there was public mourning throughout the south, but the tokens of mourning usual at the decease of a former sec. of war were not displayed at the war department in Washington. His body was removed from New Orleans to Richmond 1893, May 31, with appropriate ceremonial.

He published, besides several of his speeches, *Rise and Fall of the Confederate Government* (2 vols., 1881), in which he discusses secession and upholds his own policy in administration. A *Memoir* was issued by his wife (1890).—Of two biographies of him, both by southerners, one by Frank H. Alfriend (1868) warmly praises him; the other, by Edward A. Pollard (sub-title, *Secret History of the Confederacy*), concedes his unyielding spirit, but accuses him of an incompetency and favoritism fatal to the southern cause. See also Dr. Craven's *Prison Life of Jefferson Davis* (1866).

DAVIS, Jefferson C.: 1828, Mar. 2—1879, Nov. 30; b. Clark co., Ind.: military officer. He served through the Mexican war, and was appointed 2d lieut. 1st U. S. artil. for gallantry at Buena Vista 1848, June 17; was promoted 1st lieut. 1852; placed in command of the garrison of Fort Sumpter 1858; and was with Maj. Anderson during the bombardment 1861, Apr. In the following month he was promoted capt. and given leave of absence; raised the 22d Ind. vols.; was elected col.; and commanded a brigade under Gens. Frémont, Hunter, and Pope in Mo.; promoted brig. gen. of vols. for capturing a large Confederate force and valuable military stores at Milford, Mo., 1861, Dec. 18; took part in the siege of Corinth; led the 20th army corps into the battle of Stone River; commanded the 14th corps

in the Atlanta campaign; and was brevetted maj. gen. of vols. 1865, and appointed col. 23d U. S. inf. 1866, July 23. He was subsequently in command of troops in Alaska, and succeeded the murdered Gen. Canby in the finally successful campaign against the Modocs 1873.

DA'VIS, JOHN: eminent navigator in the latter part of the 16th c.; b. Sandridge, near Dartmouth, England. He undertook, 1585–88, three voyages to the northern seas in search of a northwest passage. In the first voyage, he sailed as far north as 73°, and discovered the strait which bears his name. He afterward made five voyages to the E. Indies, but was killed by pirates on the coast of Malacca 1605. His work, *The World's Hydrographical Description*, appeared 1595. The *Voyages and Works* of D. were issued by the Hakluyt Soc. 1880.

DA'VIS, JOHN, LL.D.: statesman: 1787, Jan. 13—1854, Apr. 19, b. Northborough, Mass.; d. Worcester, Mass. He graduated at Yale 1812, studied law, and settled in Worcester. He was in congress as a whig 1825–33, gov. of Mass. 1833–35; U. S. senator from Mass. 1835–40; again gov. of Mass. 1840–41; again U. S. senator 1845–53. He advocated a protective tariff, opposed slavery and all the compromises for its extension, and protested against the war with Mexico. His popular appellation 'Honest John Davis' showed the respect and confidence gained by his life-long adherence to principle.

DAVIS, JOHN CHANDLER BANCROFT, LL.D.: diplomatist: 1822, Dec. 29————————; b. Worcester, Mass.; son of Senator and Gov. John Davis, and nephew of George Bancroft the historian. He graduated at Harvard 1840; studied law; was sec. of the U. S. legation at London 1849–52. He was asst. sec. of state 1869–71; U. S. agent at Geneva in the conference for arbitration 1871–2, and sec. of the commission that negotiated the treaty of Washington; again asst. sec. of state 1873; U. S. minister to Germany 1874–77; and judge of U. S. court of claims 1878–82. Among his publications are: *The Case of the United State . . . at Geneva* (1871); *Treaties of the United States, with Notes* (revised ed. 1873); *Mr. Fish and the Alabama Claims* (1893).

DA'VIS, Sir JOHN FRANCIS, D.C.L., Bart.: 1795–1890, Nov. 13; b. London: long resident in China at Canton and as gov. and commander-in-chief of the colony of Hongkong. He is one of the most trustworthy authorities on China and the Chinese. In 1845 D. was created a baronet. Among his many valuable works are: *Description of China, China During the War, Chinese Miscellanies*, etc.

DAVIS, JOHN LEE: rear-admiral: 1825, Sep. 3—1889, Mar. 12; b. Carlisle, Sullivan co., Ind. He entered the U. S. navy 1841; was commissioned lieut. 1855; executive officer of the *Water Witch*, 1861; Lieut.-commander 1892, July 16. In 1862–3, commanding the gunboat *Wissahickon*, and then the iron-clad *Montauk*, he was in many battles, notably with the forts in Charleston harbor. He commanded the *Sassacus*, 1864–5; was commissioned commander 1866, captain 1873, commodore 1882; commanded the Asiatic squadron 1883–86; rear-admiral 1885, retired 1886.

DAVIS, Noah: jurist: 1818, Sept. 10.—1902, Mar. 20; b. Haverhill, N. H. In boyhood he removed to Albion, N. Y., and afterward became a lawyer. In 1857 he was appointed a justice of the New York supreme court, and was twice re-elected, resigning for service as congressman 1869–70. He was U. S. dist. atty. for the southern dist. of N. Y., 1870–72; again justice of N. Y. supreme court 1872–87. In 1887 he resumed law practice.

DAVIS, Rebecca (Harding): author: 1831, June 24, ————————; b. Washington, Penn. In her early years she resided in Wheeling, W. Va., and became known as a writer by her *Life in the Iron Mills*, published in the *Atlantic Monthly* 1861; also *A Story of To-day* (republished in a vol. 1861). In 1863 she married L. Clark Davis, of the Philadelphia *Inquirer*, and removed to Philadelphia. In 1869 she was an editorial writer on the New York *Tribune*. Besides many sketches and stories she has published several novels, among which are *Waiting for the Verdict* (1867); *Dallas Galbraith* (1867); *John Andross* (1874); *Silhouettes of American Life* (1892); *Dr. Warrick's Daughters* (1896).

DAVIS, Richard Harding: author and editor: 1864, Apr. 18————————; b. Philadelphia; son of L. Clark Davis. He studied at Lehigh Univ. and at Johns Hopkins Univ. After working as a reporter on Philadelphia papers, he began in 1888 on the staff of the New York *Evening Sun* as a writer of very acceptable short stories. In 1890, he was made managing editor of *Harper's Weekly*. Among his works are *Gallegher, and Other Stories* (1891); *Stories for Boys* (1891); *Van Bibber and Others* (1892); *The West from a Car Window* (1892); *Princess Aline* (1895).

DAVIS STRAIT: named from the navigator John Davis (q.v.), forms the s. part of that inlet of the Atlantic which washes the w. coast of Greenland. It thus connects Baffin's Bay, and in some sense Hudson's Strait, with the open ocean. At its narrowest point it is 160 m. wide. It is largely frequented by whaling-ships. A constant current, bringing much ice, flows down D. S. from the circumpolar waters. Recently, however, it has been maintained on apparently good grounds, that on the e. side an opposite current, similarly freighted, sweeps round Cape Farewell, on its way from Spitzbergen.

DAVITE, n. *da'vīt* [after Sir H. *Davy*]: a native sulphate of alumina of yellow or greenish-yellow color.

DAVITS, n. plu. *dăv'ĭts* [Sp. *gaviéte*, davit in a long boat: F. *gaviteau*, formerly a piece of wood attached to the cable of an anchor when abandoned, to act as a float to indicate its position, a buoy: F. *davier*, forceps, a davit]: iron beams, or spars, projecting, or which can be made to project like a crane over the side or stern of a vessel, from which a boat is suspended for immediate use in case of need. They are in pairs, one for each end of the boat: see Boat-lowering Apparatus. Dav'it, or Fish-davit, n. spar projecting from a ship's bow, used as a crane for hoisting the anchor and keeping it clear of the ship.

DAVITT, *dăv'ĭt*, MICHAEL: founder of the Irish Land League: b. Straide, co. Mayo, Ireland, 1846; d. Dublin, 1906, May 31. His father was a tenant farmer, who, after being evicted from his small holding 1851, emigrated to Haslingden, Lancashire, England. In 1855, Davitt went to work in a cotton factory, where two years afterward he lost his right arm through a machinery accident. He was then sent to the Wesleyan School at Haslingden, and 1861 obtained employment as asst. letter carrier and book-keeper in the combined local post-office and printing establishment. In 1866 he joined the Irish revolutionary movement initiated by James Stephens; 1868 became a commercial traveler, dealing extensively in fire-arms; and 1870 was arrested in London, tried on an indictment of treason-felony, and sentenced to 15 years' penal servitude, on the evidence of an informer, whom he swore he had never seen till his trial. After serving 7 years in Clerkenwell, Millbank, Dartmoor, and Portsmouth prisons, he was discharged on a ticket-of-leave. With other amnestied prisoners of the Fenian party he went to Dublin immediately after his discharge, was given a public reception by the citizens, and then made a lecturing tour of the western part of Ireland, England, and Scotland. In 1878 he was examined before the royal commission to inquire into the operations of the penal servitude laws, came to the United States, delivered a course of lectures in the large cities, and raised funds to inaugurate an anti-landlord crusade in Ireland. He began this work in his native county early 1879, and Oct. 21 following with Charles Stewart Parnell and others founded the Irish Land League. A month later he was prosecuted for an alleged seditious speech, but the authorities suddenly abandoned the case. He directed the Land League relief funds during the famine 1879–80; came to the United States and organized an American branch of the league 1880; had his ticket-of-leave revoked for his public utterances on his return; and was confined in Portland prison 1881, Feb.—1882, May. On the day of his release Lord Frederick Cavendish and Thomas Henry Burke were assassinated in Phœnix Park, Dublin, and Davitt joined Messrs. Parnell and Dillon in issuing a manifesto condemnatory of the murder. He again visited the United States 1882; was again prosecuted and imprisoned, for a speech against landlordism 1883; and having been previously disqualified as member-elect for Meath by a vote of the house of commons, he refused to accept several candidacies offered him from an objection to take the oath of allegiance, 1885. In 1887 he was married to Mary Yore in Oakland, Cal., and was presented with a handsomely furnished residence near Dublin by a general Irish subscription; and 1889 was one of the parties concerned in the Parnellism and Crime excitement (see HOME RULE, in Ireland), and conducted his own defense, making a powerful and effective speech. He published *Leaves from a Prison Diary* (1884).

DAVOS, *dâ'vos* (Romansch *Tavon*): small valley high among the Alps of the Eastern Grisons s.e. of Coire. The height of the village of Davos-Platz is 5,105 ft.; but the valley, inclosed by lofty hills, has become famous as a health-resort in winter, especially for such as suffer from chest disease. The air is still and dry, and throughout the winter there is much bright, warm sunshine. Till lately a mere hamlet; the village has now eight or ten hotels, numerous villas and chalets, several doctors, and daily mails. The inhabitants of the valley, which till 1848 was one of the 26 independent republics of the Grisons, are mostly German Protestants. See *Davos-Platz, a new Alpine Resort.*

DAVOUT, *dâ-vô'* (not DAVOUST as commonly written), LOUIS NICOLAS: French marshal: 1770, May 10—1823, June 1; b. Annoux, in the old province of Burgundy. He was educated with Bonaparte at the military school of Brienne; and in 1785, became sub lieut. in a cavalry regiment. During the revolutionary wars, he rose to the rank of general. He accompanied Bonaparte to the East, where he mainly contributed to the victory at Aboukir, and otherwise distinguished himself both in Upper and Lower Egypt. On his return to France he was named gen. of division 1800, commander-in-chief of the consular grenadier guards 1801, and marshal of the empire 1804. In the campaigns of 1805, 6, 7, he bore a brilliant part in the great victories at Ulm, Austerlitz, Jena, Auerstadt, Eylau, and Friedland. In reward of his bravery, Bonaparte created him Duke of Auerstadt (1808, Jul. 2). On the renewal of the war with Austria 1809, D. was created Prince of Echmühl for his services at the battle of Echmühl. At Wagram, he performed prodigies of valor. Appointed gov. of Poland, he ruled that country in a spirit of the harshest despotism, and provoked the reproaches of the emperor, but, nevertheless, did not change his system. In the Russian campaign of 1812, he gathered fresh laurels on the fields of Mohilow and Borodino. After the retreat from Moscow, D. became gov. gen. of the Hanse towns, and established himself at Hamburg, where he gallantly maintained himself till the first restoration of the Bourbons. On the return of Bonaparte from Elba, D. was appointed war-minister, and in this office showed a remarkable genius for rapid organization of troops and supplies. After the battle of Waterloo, he received the command of the relics of the French army under the walls of Paris. He would have continued the contest, had he not been ordered by the provisional government in the capital to conclude a military convention with the allies. In 1819, he was made a peer of France. Firmness of character and dauntless courage were D.'s leading characteristics; but his military severities were often even cruel, while his rapacity was akin to barbarism.

DAVY, *dā'vĭ*, Sir HUMPHRY: one of the greatest of chemists: 1778, Dec. 17—1829, May 29; b. Penzance, in Cornwall, England, where his father was a carver in wood. At the school of Truro, where he was educated until the age of 15, he showed little relish for classical learning, but was

distinguished for a highly retentive memory and a passion for poetry, which never forsook him. Another prominent trait of his character was equally early developed; as a child, he would angle even in the gutters of the streets; and only two years before his death, after his health had given way, he published his interesting volume, *Salmonia, or Days of Fly-Fishing.* Soon after leaving school, he became apprentice to a surgeon and apothecary in Penzance. He at the same time entered upon a course of study almost universal. 'Speculations on religion and politics, on metaphysics and morals, are placed in his note-books in juxtaposition with stanzas of poetry and fragments of romance.' A system of mathematical study, skeptical philosophy, Scotch metaphysics and German transcendentalism, successively engaged his attention. The study of natural philosophy brought him nearer to that department which was to be his own; but it was not till he had reached his 19th year, that he entered seriously upon the study of chemistry. He now made the acquaintance of Dr. Deddoes, who had established a Pneumatic Institution at Clifton, and who took him as his assistant. Here D. carried on a course of experiments on the respiration of different gases, in which he had more than once nearly sacrificed his life. He thus discovered the singular exhilarating effect of nitrous oxide when breathed, and the account which he published established his reputation, and led to his appointment at the age of 22 as lecturer to the Royal Institution of London. He delivered his first lecture 1801; and his eloquence, and the novelty and variety of his experiments, soon attracted crowded and brilliant audiences. In 1803, he began researches connected with agriculture, on which he delivered a course of lectures. These were published 1813, under the title of *Elements of Agricultural Chemistry,* and form an era in that science. The discoveries, however, on which chiefly D.'s fame as a chemist rests, took their origin in the views which he developed 1806, in his Bakerian lecture, *On some Chemical Agencies of Electricity.* This essay was universally regarded as one of the most valuable contributions ever made to chemical science, and obtained the prize of the French Institute. Following out his principle, he was led to the grand discovery, that the alkalies and earths are compound substances formed by oxygen united with metallic bases. It was potash that he first succeeded in decomposing, 1807, Oct. 8. When he first saw the globules of the new metal, *potassium,* his delight is said to have been so ecstatic that it required some time for him to compose himself to continue the experiment. He next decomposed soda and the alkaline earths, baryta, strontia, lime, and magnesia; and discovered the new metals, *sodium*, *barium*, *strontium*, *calcium*, and *magnesium.* With regard to the earths proper, he succeeded in proving that they consist of bases united to oxygen. It was reserved for Wöhler and others to exhibit the bases by themselves.

In 1812, D. was knighted, married a lady of considerable wealth, and resigned the chemical chair of the Royal Institution. That he might investigate his new theory of

volcanic action, he received permission from the French govt.—though Britain and France were then at war—to visit the continent, and was received with the greatest distinction by the scientific men of France. Returning to England 1815, he entered on the investigation of the nature of fire-damp, the cause of explosions in coal-mines. This resulted in the invention of the safety-lamp (q.v.)—one of the most valuable presents of science to humanity. Though the value of the invention was everywhere acknowledged, the only national reward was a baronetcy after a lapse of three years. This has been contrasted with the pension of £1,200 a year bestowed by the same government on Sir William Congreve for the invention of his rocket. On the death of Sir Joseph Banks, 1820, Sir Humphry D. was elected pres. of the Royal Soc. His attention was shortly afterward called to the preservation of the copper sheathing of vessels from corrosion by the action of sea-water. This he effected by altering the electric conditions of the copper by means of bands of zinc; but the bottoms of the vessels became so foul from the adhesion of weeds, shells, etc., that the plan had to be adandoned.

Early in 1825, he had begun to complain of the loss of strength, and, in 1826, a paralytic attack affected his right side. He made two journeys to the continent for the recovery of his health, but died at Geneva, at the early age of 51. The Genevese government evinced their respect by a public funeral. So widely spread was the reputation of Sir Humphry D., that he was a member of almost all the scientific institutions in the world. Cuvier, in his *Eloge*, says: 'Mr. Davy, not yet 52 years of age, occupied, in the opinion of all that could judge of such labors, the first rank among the chemists of this or of any other age. Besides the works already mentioned, and a great number of contributions to the Philosophical Transactions, he published *Elements of Chemical Philosophy* (Lond. 1812); and *Consolations in Travel, or the Last Days of a Philosopher* (3d ed. Lond. 1831), appeared after his death. See *Memoirs of the Life of Sir Humphry D.*, by his brother (Lond. 1836, 2 vols.); and *The Life of Sir Humphry D.*, by Dr. Paris (Lond. 1831).

DAVY JONES'S LOCKER: the bottom of the sea; in *the language of seamen*, applied to the abode of the dead—a supposed corruption of *Jonah*, who was thrown into the sea, and *locker*, which see.

DAVY-LAMP, n. *dā'vĭ-lămp:* a form of lamp whose light is surrounded by fine wire gauze, by which explosive gases are excluded, invented by Sir Humphry Davy, used in workings subject to explosions of fire-damp; called also *Davy's Safety-lamp:* see SAFETY-LAMP.

DAW, v. *daw* [Swiss, *dähi;* O.H.G. *táha;* Bav. *dahel*, a daw]: a bird of the crow kind; the jackdaw. DAW'ISH, a. like a daw. See JACK-DAW.

DAW, v. *daw* [see DAWN]: in *Scot.* and *OE.*, to dawn. DAW'ING, imp.: N. daybreak. DAWED, pp. *dawd.*

DAWAL'LA (*Hypophthalmus dawalla*): fish of the family *Siluridæ*, found in the rivers of Guiana, and esteemed for the delicacy of its flesh. It is sometimes two ft. and a half long, and has a snout somewhat like that of a pike, but the teeth are very minute. The skin is destitute of scales,and the colors have that brightness so often seen in tropical fishes, green, brown, and carmine. The Dawalla has become shy in the waters of the more populous and long-settled parts of Guiana, although easily captured in more remote regions.

DAWDLE, v. *daw'dl* [F. *dada*, a hobby-horse: Scot. *daidle*, to walk unsteadily like a child: Gael. *dabhdail*, to saunter, to loiter]: to do a thing in a purposeless manner like a child, and slowly; to trifle and waste time. DAW'DLING, imp. DAWDLED, pp. *-dld*. DAW'DLER, n. *-dlėr*, a trifler; one who lingers.

DAWISON, *dâ've-son*, BOGUMIL: 1818, May 15—1872, Feb. 2; b. Warsaw, Poland: actor. He made his first appearance on the stage in his native city 1837; became connected with the Thalia Theatre in Hamburg 1847; was leading actor at the Royal Theatre in Dresden 1852–66; and made a professional tour of the United States 1866–68; His specialties were the chief characters in the dramas of Shakespeare, Goethe, and Schiller. He became insane on his return to Europe.

DAWK, n. *dawk* [Hind. *dâk*]: in *India*, a method of travelling; a letter or packet post; a parcel delivery. TANGA DAWK [Hind. *tanga*, a small two-wheeled car], or DAWK GAREE [Skr. *gari*, a carriage or cart]: a mail-cart. —Travelling by dawk (or dak) consists in posting by palanquin from station to station, or for any distance. The traveller must first purchase a strong palanquin, which he can have for from 40 to 100 rupees ($20 to $50), but which he can always dispose of when his journey ends, and generally at a profit. His clothes, with whatever articles he may not immediately need, are carried in tin-boxes or wicker-baskets called *pettarahs*, by separate bearers, who precede or accompany the palanquin; whatever he considers necessary, however, he keeps beside himself inside. At all the stages, 9 to 11 miles apart, there are relays of bearers, previously provided by the postmaster, the usual number for one palanquin being 11. All arrangements as to cost are made with the postmaster of each presidency before starting, but the traveller is also expected to give some small sum to his bearers at the end of each stage: eight annas (abt 25 cents) among the entire set of bearers is as much as is expected in the way of gratuity. The Horse-dawk,—a kind of carriage with seats for four, and capable of being used as a bed in which two can sleep, the baggage being conveyed on the top,—set on wheels, and drawn by horses, is in use on the great trunk road from Calcutta to the upper provinces, but has not been established throughout the country.

DAW'LISH': flourishing and picturesque watering-place, on the s. coast of Devonshire, 12 m. s. of Exeter.

It lies in a valley lying e. and w. between the mouths of the Exe and Teign. It has recently built public baths. Pop. 4,003.

DAWN, n. *dawn* [Icel. *dagan*, dawn; *dagur*, day: AS. *dagian*, to become day]: the break of day; the first appearance of light in the morning; first opening or expansion; rise; beginning; first appearance: V. to begin to grow light; to begin to open or expand; to glimmer obscurely. DAWNING, imp.: N. first appearance of anything, as the day, reason, intellectual powers. DAWNED, pp. *dawnd*. See TWILIGHT.

DAWSON, ALEC JOHN, English novelist and traveler: b. Wandsworth, England, 1871. He has traveled extensively in the South seas, Africa, South America, etc., and is the author of *Middle Greyness; Mere Sentiment; Leeway; God's Foundling; The African Nights' Entertainments; Bismillah; In the Bight of Benin; Daniel Whyte; The Story of Ronald Kestrel; Joseph Klassin: Half Caste.*

DAWSON, GEORGE MERCER, Canadian geologist: b. Pictou, Nova Scotia, 1849, Aug. 1, d. 1901. He was a son of Sir J. W. Dawson (q.v.) and was educated at McGill University and at the Royal School of Mines in London. In 1874 he was made assistant director and in 1895 director of the Geological Survey of Canada. He was the author of *Geology and Resources of the Forty-ninth Parallel*, and similar works.

DAWSON, HENRY, English landscape painter: b. Hull, 1811, April 3; d. Chiswick, 1878, Dec. 13. In early life he was a worker in a Nottingham lace-factory but this occupation he gave up for art in 1835. After struggling some time at Nottingham he removed to Liverpool in 1844, and thence to Croydon in 1850, and subsequently he resided at Chiswick. It was long before his abilities were fully recognized, and his pictures began to bring high prices only a little before his death. Among the best of them are: *Wooden Walls of Old England; London from Greenwich Hill; Houses of Parliament; The Rainbow; Rainbow at Sea; The Pool Below London Bridge.*

DAWSON, SIR JOHN WILLIAM, Canadian geologist: b. Pictou, N. S. 1820, Oct. 13: d. Montreal 1899, Nov. 19. He was educated at Pictou Academy and University of Edinburgh; appointed principal and professor of natural history, McGill University, Montreal 1855; made many and notable investigations and discoveries in geology; served as president of the British Association 1886, president of the American Geological Society 1893, first president of the Royal Society of Canada 1882. His published works include: *Acadiene Geology; Archaia: Or Studies of Creation in Genesis; Air Breathers of the Coal Period; Handbook of Canadian Zoology; Notes on the Post Pliocene of Canada; The Origin of the World; Fossil Men and Their Modern Representatives; Science and the Bible; The Dawn of Life; The Chain of Life; Salient Points in the Science of the Earth; Science in Bible lands; The Meeting*

place of Geology and History; The Historical Deluge; Eden Lost and Won; Ethics of Primeval Life.

DAWSON, Miles Menander, American actuary and author: b. Viroqua, Wis., 1803, May 13. He has published: *Elements of Life Insurance* (1892); *American Life Insurance Methods* (1893); *Assessment Life Insurance* (1895); *Lessons in Actuarial Science* (1897); *American Experience* (1900); *Things Agents Should Know* (1900); *The Effect of Free Surrender and Loan Privileges in Life Insurance* (1894); *Principles of Insurance Legislation* (1896); *The Function of Insurance in Modern Society* (1898); *Development of Insurance Mathematics* (1901); *Poems of the New Time* (1802), etc. He has also translated *Elsie*, a novel, from the Norwegian of Alexander Kjeland (1892).

DAWSON, Samuel Edward: b. Halifax, 1833: entered upon the business career of book-selling in Montreal; wrote frequently in papers and magazines upon historical subjects; appointed Queen's printer and controller of stationery at Ottawa 1891. Chief works are: *Episcopal Elections, Ancient and Modern; The Prose Writers of Canada; Copyright in Books; British North America; A Compendium of Geography and Travel; The Voyages of the Cabots; A Study of the Princess; Pope Alexander VI and the Treaty of Tordesillas; The Discovery of America by John Cabot.*

DAWSON, William James, English poet, novelist, and clergyman: b. Towcester, Northamptonshire, 1854, Nov. 21. He entered the Wesleyan ministry in 1875 and held various Wesleyan pastorates until 1892, when he became pastor of the Highbury Quadrant Congregational Church, London. His works include: *Arvalon:* a *First Poem* (1878); *A Vision of Souls* (1884); *Quest and Visions: Essays on Life and Literature* (1886); *The Threshold of Manhood* (1889); *The Makers of Modern Poetry* (1890); *The Redemption of Edward Strahan: a Social Story* (1891); *Poems and Lyrics* (1893); *London Idylls* (1895); *The Comrade-Christ: Sermons* (1894); *The Story of Hannah* (1896); *The House of Dreams* (1897); *Through Lattice Windows* (1897); *Table Talk With Young Men* (1898); *Judith Boldero, a Tragic Romance* (1898); *Makers of Modern Prose* (1899); *Savonarola: a Drama* (1900); *The Man Christ Jesus* (1901). *The Quest of the Simple Life* (1903); *The Evangelistic Note* (1905); etc.

DAWSON, William Mercer Owens, American governor: b. Bloomington, Md., 1853: Became owner of Preston County *Journal* 1875; later admitted to bar; state senator of West Virginia 1881–8; clerk House of Delegates 1895; mayor of Kingwood; secretary of state of West Virginia 1897–1905, and governor 1905–9.

DAWSON, Canada, city and capital of Yukon District, Northwest Territories. It is situated on the right bank of the Yukon River, 1500 m. from its mouth, at the confluence of the Klondike River, about 50 m. east of the Alaskan boundary; in lat. about 64° n. and long. 139° w.

The city, which is near the site of old Fort Reliance, has grown up since the discovery of gold on Bonanza Creek, 1896, Aug. 16, and is the receiving and distributing centre for the Klondike mining district. It is mostly well built, the two great fires of 1899 having destroyed many of the rude, temporary structures. It has churches, schools, banks, warehouses, hotels, newspapers, telegraph and telephone service, theatres, and an electric light plant. Forty below zero is the average temperature for days at a time, but blizzards are not common. Thawing the ground by steam, the use of automatic lifts and buckets, and of machinery in general, have largely increased the gold output of the region. Coal deposits have been found nearby. Steamers ply upon both the upper and lower Yukon. Dawson has a United States consulate. Pop. (1901) 9,142.

DAX, *dâks:* town of France, dept. of Landes, pleasantly situated on the left bank of the Adour, 20 m. n.e. of Bayonne. Among its principal buildings are the high church, once a cathedral, and the bishop's palace. It is an intermediate depot for goods forwarded to Spain, and it is notable for its hot saline springs, the temperature of which at the source is 158° F. The water, which is medicinal and nearly tasteless, was used for bathing purposes by the Romans, who conferred upon the springs the name Aquæ Augustæ Tarbellicæ. Pop. 6,500.

DAY, n. *dā* [in the Middle Ages the word *day* was applied to the day appointed for hearing a cause, or for the meeting of an assembly: Dut. *daghen*, to appoint a day for a certain purpose: old Sw. *dag*, the time appointed for a convention: AS. *dæg;* Ger. *tag;* Icel. *dagr*, a day: Skr. *daha*, light or redness in the sky]: one complete revolution of the earth on its axis; the time from midnight to midnight, a period of twenty-four hours; in *common language*, the time from sunrise to sunset, as opposed to the darkness or night; publicity; light; any specified time; age; as in these days; time. DAI'LY, a. *-lĭ*, happening or issued every day. AD. every day; day by day: N. a journal or newspaper published every day except Sunday. DAILIES, n. plu. *dā'-lĭz*. DAYSMAN, n. *dāz'măn* [OE. *day*, time, judgment]: the judge appointed to decide between parties at a judicial hearing. DAY-BLINDNESS, *nyctalopia*, a defect of sight, owing to which objects can be seen distinctly only by night, and not in the daytime. DAY-BOOK, a book containing entries of transactions just as they occur every day. DAY-BREAK, n. dawn. DAY-DREAM, a reverie; waking visions. DAY-LABOR, labor performed or hired by the day. DAY-LABORER, one who works by the day. DAYLIGHT, the light of the sun as opposed to that of the moon. DAY-SIGHT, *hemeralopia*, a defect of the sight, owing to which objects can be seen distinctly only in the daylight, and but dimly or confusedly in the dusk. DAY-STAR, morning star; in *Scrip.*, the divine revelation; the light of the Gospel. DAY-WOMAN, in *OE.*, a dairywoman; a dairymaid. DAY BY DAY, every day. DAY OF GRACE. the time that mercy

is offered. DAYS OF GRACE, the three days allowed for the payment of a bill of exchange after its date has expired. DAYSPRING, n. the dawn of light; sun-rising. DAY-TICKET, in a *railway* or *steamboat*, a ticket to enable a passenger to return on the same day. DAY'S JOURNEY, in the *East*, a mode of computing the distance that can easily be travelled over in a day. DAYTIME, the time during which the sun gives light to the earth. FROM DAY TO DAY, without certainty or continuance. TO-DAY, on this day. ASTRONOMICAL DAY, the day which begins at noon and ends at noon. CIVIL DAY, the mean solar day of twenty-four hours, being that in ordinary use, and divided into two series, each from *one* to *twelve*. JEWISH DAY, the period from sunset to sunset. SIDEREAL DAY, the day measured by the stars, being the interval between two successive transits of a star, for convenience the first point of Aries, over the same meridian. SOLAR DAY, the day measured by the sun, being the interval between two successive transits of the sun's centre over the same meridian. MEAN SOLAR DAY, the mean or average of all the apparent solar days in the year. TO WIN THE DAY, to gain the victory; to be successful. *Note.*—DAY may have been nothing more, primarily, than the name of the 'sun-god,' naturally extended to the space of time during which he exerted his power, and could be worshipped; hence identical with the name for a god common in the Aryan languages: we have Gr. *Theos*, L. *Deus*, Gael. *Dia*, F. *Dieu*, It. *Deos*, Sp. *Dios*, God: L. *dies*, day: also *divum*, the sky, from the root, *div*, to shine. See Dr. C. Mackay.

DAY: originally the period during which it is light, in opposition to the period of darkness or night; time from sunrise to sunset. It now denotes also (and usually) a complete alternation of light and darkness, occupying in most parts of the earth 24 hours. It is the earth's rotation that causes the vicissitude of day and night. The earth being a globe, only one-half of it can be in the sun's light at once; to that half it is day, while the other half is in shadow, or in night. But by the earth's rotation, the several portions of the surface have each their turn, of light and of darkness. This happens because the position of the earth is such that the equator is on the whole presented towards the sun; had either pole been toward the sun, that hemisphere would have revolved in continual light, the other in continual darkness.

One complete rotation of the earth does not make a day, in the usual sense. If the time is noted when a particular fixed star is exactly south or on the meridian, when the same star comes again to the meridian the next day, the earth has made exactly one rotation, and the time that has elapsed is called a *sidereal day*. This portion of time is always of the same length; for the motion of the earth on its axis is strictly uniform, and is, in fact, the only strictly uniform motion that nature presents. Sidereal time, or star-time, from its unvarying uniformity, is much used by astronomers. But the passage of a star across the meridian is not a conspicuous enough event for

regulating the movements of men in general. It is not a complete rotation of the earth, but a complete alternation of light and darkness, that constitutes their day. This, which is called the *civil* or the *solar* day, is measured between two meridian passages of the sun, and is about four minutes longer than the sidereal day. The cause of the greater length is this: When the earth has made one complete turn, so as to bring the meridian of the place to the same position among the fixed stars as when it was noon the day before, the sun has in the mean time (apparently) moved eastward nearly one degree among the stars, and it takes the earth about four minutes more to move round so as to overtake him. If this eastward motion of the sun were uniform, the length of the solar day would be as simple and as easily determined as that of the sidereal. But the ecliptic or sun's path crosses the earth's equator, and is therefore more oblique to the direction of the earth's rotation at one time than another; and besides, as the earth moves in her orbit with varying speed, the rate of the sun's apparent motion in the ecliptic, which is caused by that of the earth, must also vary. The consequence is, that the length of the solar day is constantly fluctuating; and to get a fixed measure of solar time, astronomers have to imagine a sun moving uniformly in the celestial equator, and completing its circuit in the same time as the real sun. The time marked by this imaginary sun is called *mean solar time;* when the imaginary sun is on the meridian, it is *mean noon;* when the real sun is on the meridian, it is *apparent* noon. It is obvious that a sun-dial must show apparent time, while clocks and watches keep mean time. Only in four days of the year do these two kinds of time coincide. In the intervals, the sun is always either too fast or too slow; and the difference is called *the equation of time*, because, when added to or subtracted from apparent time, it makes it equal to mean time. The mean solar day is divided into 24 hours, the hours into minutes and seconds. A sidereal day, we have seen, is shorter; its exact length is 23 hours, 56 minutes, 4 seconds of mean solar or common time. Astronomers divide the sidereal day also into 24 hours, which are of course shorter than common hours. In the course of a civil year of 365 days, the earth turns on its axis 366 times, or there are 366 sidereal days. Astronomers reckon the day as beginning at noon, and count the hours from 1 to 24. The civil day begins at midnight, and the hours are counted in two divisions of twelve each. The ecclesiastical day, like the Jewish day, was reckoned from sunset to sunset.

A day, in law, includes the whole 24 hours, without any reference to the season of the year, or the amount of light or darkness. Where there is no qualifying stipulation, therefore, the obligation to pay on a certain day is discharged if the money be paid before 12 o'clock at night, which is counted as the commencement of the following day. On the same principle, if anything is to be done within a certain number of days from or after the doing of a certain other thing, the day on which the first act or occurrence takes place is excluded. If A binds himself to

pay money 10 days after B's death, and B dies on the 1st, the money will not be due till the night of the 11th at 12 o'clock. Unless the contrary be absolutely necessary, for the purposes of justice, the law excludes fractional portions of time; thus, half a year consists of 182 days, and a quarter of a year of 91.

A *lawful day* is a day on which there is no legal impediment to the execution of a writ—i.e., all days except Sundays and certain holidays appointed by government. Criminal warrants are an exception to this rule, and may be both granted and executed on Sundays and holidays. All contracts made by persons in their ordinary calling on a Sunday are void: for exceptions to this rule, see LORD'S DAY.

Days of Grace.—The time at which a bill is actually *due*, or *at maturity*, is in general three days after the time expressed on the face of it. The three additional days generally allowed by the custom of merchants, and which the laws recognize and protect, are called days of grace. If the third day of grace fall on a Sunday, the bill is payable the day before. If it fall on any of the bank holidays, the bill is payable the day after: see BILL.

DAY, *dā*, HORACE H.: 1813–1878, Aug. 23; manufacturer. He obtained a license from Charles Goodyear for manufacturing shirred rubber goods, and was subsequently sued by Mr. Goodyear for infringing on his patent rights in woven goods. A cross-suit was instituted, and the two manufacturers were involved in costly litigation many years. One of their suits, tried at Trenton, N. J., is memorable from the facts that Daniel Webster appeared as counsel for Mr. Goodyear and Rufus Choate for Mr. D., that Mr. Goodyear won the case, and that Mr. D. surrendered his license, factory, and machinery, and retired from the business on the receipt of $350,000 and $21,000 paid as counsel fees. In 1856 he organized a company to utilize the water-power of Niagara Falls for manufacturing purposes, and spent over $700,000 in building a canal and providing a harbor at Grass Island; but all his improvements were sold under foreclosure of mortgages 1877. He subsequently established a large rubber factory at New Brunswick, N. J., sold his interest for $40,000, and retired to Manchester, N. H., where he died.

DAY, JEREMIAH, D.D., LL.D.: 1773, Aug. 3—1867, Aug. 22; b. New Preston, Conn.: educator. He graduated at Yale College 1795, spent two years as tutor at Williams College, studied theology, was elected prof. of mathematics and natural philosophy at Yale 1801, and succeeding Dr. Dwight, was pres. 1817–46. His mathematical publications include an *Algebra* (1874), *Mensuration of Superficies and Solids* (1814), *Plane Trigonometry* (1815), and *Navigation and Surveying* (1817): other publications are *An Examination of President Edwards's Inquiry as to the Freedom of the Will* (1814), and *An Inquiry on the Self-determining Power of the Will, or Contingent Volition* (1838–49). He received the degree LL.D. from Middlebury Univ., 1817, and D.D. from Union College 1818 and Harvard Univ., 1831.

DAY, Thomas: 1748, June 22—1789, Sept. 28; b. London: political writer and poet. He studied at Oxford. The American war of independence, with which he strongly sympathized, seems to have roused his poetical energies. In 1773, he published *The Dying Negro;* in 1776, *The Devoted Legions;* and in 1777, *The Desolation of America.* But he is remembered chiefly as the author of the famous *History of Sandford and Merton*, as also the *History of Little Jack.*

DAY, William Rufus, American jurist: b. Ravenna, O., 1849, April 17. He was graduated from the University of Michigan in 1870, and from the law school of the same institution in 1872. In the latter year he was admitted to the Ohio bar, and began the practice of law at Canton, where he soon gained local and state distinction; in 1886 he was elected judge of the common pleas court of the 9th judicial district, being the candidate of both political parties. In 1889, President Harrison appointed him United States district judge for the northern district of Ohio, but he was obliged to decline the appointment on account of ill health. In 1897 he was made assistant secretary of state by his friend, President McKinley, and in 1898, April, he succeeded Sherman as secretary of state, as such conducting all the negotiations of the Spanish war. Later in 1898 he resigned the secretaryship, and was appointed chairman of the United States Peace Commission to frame a treaty of peace with Spain, in which capacity he had a conspicuous and responsible part in all peace negotiations. He then returned to his law practice, but in 1899 was appointed to succeed Judge Taft as United States circuit judge, and on 1903, Jan. 26, was appointed to the Supreme Court by President Roosevelt.

DAY'AKS: see Borneo: Brooke, Sir James.

DAY-BLINDNESS: see Blindness.

DAY-LILY (*Hemerocallis*): genus of plants of the nat. ord. *Liliaceæ*, having a perianth with bell-shaped limb, and sub-cylindrical tube, and globose seeds with soft *testa.* Several species are cultivated in flower-gardens, especially the fragrant Yellow Day-lily (*H. flava*), native of Hungary, Siberia, and the north of China.

DAY-MARE, a feeling of temporary distress or terror similar to the distress of dreams (night-mare) but occurring during a period of wakefulness, or, at times, of light revery. Its cause is obscure, though it may be connected with disorders of circulation. It occurs in nervously disposed individuals and in conditions of fatigue.

DAYS'MAN: formerly in England, and still in some northern countries: arbitrator, umpire, or elected judge. It has its origin in the judicial language of the Middle Ages, when the word *Day* was specially applied to the day appointed for hearing a cause, or for the meeting of an assembly. A daysman was thus a judge appointed to decide between disagreeing parties at a judicial hearing. The word occurs in Scripture in the sense of umpire, Job

ix. 33: where Job sorrowfully says, in reference to his relation to God:

> 'There is no daysman between us,
> That might lay his hand upon us both.'

DAYTON, *dā'ton*, city, capital of Montgomery co., Ohio, at the confluence of the Great Miami and Mad Rivers, and Stillwater and Wolf Creeks; and on the Erie, the Dayton and Union, and the Pittsburg, Cincinnati, Chicago and St. Louis R.R.'s, 60 m. n. of Cincinnati and 67 s.w. of Columbus. The new Union Station was opened to the public in July, 1900, at a cost, including trackage, of $900,000, and more than 125 trains enter it daily.

History.— The town was laid out in November, 1795, by Gen. Israel Ludlow and was named after Gen. Jonathan Dayton. The first settlers arrived in the spring of 1796. Situated in the Miami Valley, one of the most fertile valleys in the United States, producing for many years crops of corn, wheat, tobacco and numerous cattle, sheep and horses and with abundant water power to develop its industries. Dayton has grown to be the third largest manufacturing city in the state. With its industries so diversified, its banks and building associations so strong and uniformly successful and with its people so well educated, it is one of the richest and most prosperous communities in the Union.

Government and Municipal Interests.— The mayor, treasurer, auditor, solicitor, board of public service, of three members, are chosen by popular election. The board of public safety, of two members, and the board of health are appointed by the mayor and confirmed by council. The city council, composed of 13 members from 10 wards, is elected by popular vote, for two years, each member receiving an annual salary of $250. It is a legislative body only. The supply of water for the city is almost inexhaustible in quantity and of almost absolute purity. In 1904 there were 133 miles of street mains, 1,300 fire hydrants, 15,503 service taps. The fire department has a force of 90 men, 14 engine-houses, 50 horses, maintained at a cost of $86,728.48, and with property worth $375,000. A complete system of surface and underground sewerage, both storm and sanitary, is provided. In 1904 there were 67.9 miles of storm sewerage. On 31 Dec. 1903 the city's financial statement was as follows: Assessed value of taxable property, $47,250,640; real value of taxable property (estimated), $100,000,000; total bonded debt, including this issue, $2,925,000; cash value of sinking funds, $157,000; bonded debt of city (net), $2,768,000; waterworks bonds included in total debt, $908,000; tax rate per $1.000 valuation, $28.60.

Banks and Banking.—There are 7 National banks and 2 savings and trust companies. A report of the condition of the National banks in 1904 showed that the aggregate capital stock was $2,400,000; surplus, $625,000; undivided profit, $561,412.51; with a total of loans and discounts of $7,798,178.75; deposits, $7,580,288.51 and a circulation of

$563,700. One of the savings and trust companies has a capital and surplus of $250,000 and the other a capital of $275,000. The clearing-house reports for 1903 were $86,807,930.41; for 1902, $76,491,771.15. The internal revenue receipts for 1903 were $2,617,679.07.

Manufacturing Interests.—While Dayton's manufacturing industries are widely diversified and include the manufacture of cash registers, railroad cars, water-wheels, agricultural implements, sewing machines, foundry work, etc., these are conducted on so large a scale that many establishments employ from 500 to 2,500 hands. According to the U. S. census of 1900, the average number of wage-earners in the city was 16,869; the total wages paid was $7,959,792, and the value of the productions was $35,697,695. Great progress was made since 1900 and careful estimates show that in 1903 the average of wage-earners had increased to 20,740, with a total wages paid of $10,180,619 and the value of the products $46,596,875. There are 9 lines of electric traction roads with a total mileage of 385 miles, which radiate in all directions through the populous and rich country of which Dayton forms the centre. The city railway lines, 3 in number, have a total mileage of 70 miles and render excellent service.

Education, Libraries, etc.—On 31 Aug., 1903, there were 48 schools, 23 district schools, and 1 high school with 37 teachers and 1,058 pupils, and with property valued at $326,252; 1 normal school with an attendance of 67, 22 kindergartens with an attendance of 1,058, 1 manual training school with an attendance of 1,710, and 1 school for the deaf. The total value of school property and equipments was $1,467,387. There are 10 Catholic parochial school with 94 teachers and 3,023 pupils, and 2 Lutheran parochial schools with 89 pupils, and also 3 large colleges and seminaries for Catholic youth, and 4 well-attended business colleges, one one which, the Miami Commercial College, was established in 1860. The Union Biblical Seminary is the training college of the United Brethren denomination of the U. S, and a very successful Arts and Crafts Society is doing excellent work. There are 90 churches in the city. Dayton had the first library incorporated in the state, established in 1805. The public library was opened in 1855 and is supported by public taxation, having an income of $18,000 per annum. There are several daily newspapers and many other publications.

Hospitals.—The city hospitals include the Saint Elizabeth Hospital, the Miami Valley Hospital, and the Protestant Hospital, which has a large central building known as the Frank Patterson Memorial of Operative Surgery, one of the most complete buildings for its purpose in the U. S. The Dayton State Hospital for the insane is maintained by the state. The hospital of the National Military Home which adjoins the city is the largest military hospital in the world, and has an average of 600 patients, all of whom are veteran volunteer soldiers of the Civil

and Cuban war. Pop. (1900) 85,333; (1910) 116,577.

D'AZARA, *dâ-thâ'râ*, Don FELIX: naturalist: b. Barbunales, Aragon, 1746, May 18; d. after 1802. He was educated at the Univ. of Huesca, obtained a commission in the Spanish army, was severely wounded in the attack upon Algiers; and 1781 was appointed one of the commissioners for fixing the boundaries of the Spanish and Portuguese possessions in S. America, in which regions he spent nearly 20 years, applying himself also in the geography, ethnology, and natural history of those lands. Returning to Spain, 1801, he published an account of his travels; also an important work on quadrupeds and bipeds, *Notes on the Natural History of Paraguay and La Plata* (Madrid 1802, *et seq.*).

DAZE, v. *dāz* [Dut. *daesen*, to lose one's wits in fright: Icel. *das*, a faint, exhaustion: Sw. *dasa*, to lie idle: Bav. *dosen*, to keep still (see DOZE)]: to stun; to stupefy with a blow, or with excess of light, fear, cold, etc.: N. among *miners*, a glittering stone. DA'ZING, imp. DAZED, pp. *dāzd*. DAZZLE, v. *dăz'l*, to overpower with light; to strike or surprise with brilliancy or splendor; to be overpowered with light. DAZ'ZLING, imp. DAZZLED, pp. *dăz'ld*. DAZ'ZLINGLY, ad. *-lĭng-lĭ*. DAZZLEMENT, n. *dăz'l-mĕnt*, the state of being dazzled; the act of.

DE, pref. [L.]: a moving down or from; separation or taking away. DE often expresses a negative, and sometimes only augments the sense. DE has the force of DIS, asunder, as in *de*range, *de*part. DE is often used for *dis* in words derived from the French.

DEACON, n. *dē kn* [L. *diacŏnus;* Gr. *diakŏnos*, a minister or servant]: one of the lower grade of ministers or servants in the church. DEACONSHIP, n. *dē'kn-shĭp*, or DEA'CONRY, n. *-rĭ*, the office of a deacon. Deacons in apostolic times, properly those officers of a Christian congregation or church that had the charge of collecting and distributing the alms, and of taking care of the poor and the sick. The office, therefore, was not of the kind now known as clerical, though the term deacon or servant, like that of *minister*, which has the same meaning, might be at times applied to teachers or preachers. The limitations of the office of deacon to the functions above specified continued to be recognized as late as the council of Trullanam, 692. The Church of Jerusalem chose at first seven deacons, individuals of whom, no doubt, as Philip, also taught and baptized, but only because they were evangelists as well as deacons: indeed from the New Testament record there seems to have been no strict limitation of teaching, preaching, and baptizing, to an order of clerical officials; though doubtless these functions were exercised, with due regard to order, only under the charge of the pastor or bishop in each local church, where such churches existed. The number seven continued to be adhered to in all churches. During the 2d and 3d c., the duties falling to the deacons had considerably increased; and since as confidential attend-

ants and helpers of the bishops (at that period exercising a diocesan authority over several churches) the deacons had risen into consequence, it became necessary to divide the various functions among an archdeacon, deacons, and subdeacons. Deacons might now dispense the bread and wine at the communion, but not consecrate them. They had to receive the offerings and presents for the bishop, to keep the sacred vessels, to chant the introductory formulas of public worship, and to take the oversight of the morals of the congregation: and they were allowed, in many cases, with the leave of the bishop, to preach and baptize, and receive penitents into the communion of the church. At an early period, the offices of archdeacon and deacon were considered to belong to the higher orders of consecration (*ordines majores*); this was not the case with that of subdeacon till after the 12th c. At the consecration of a deacon as one of the lowest order of clergy in the Rom. Cath. Church, the sacred vessels are handed to him as symbols of his office. His peculiar robes are the dalmatica and the stole.

Prot. churches, the position of deacon varies. In Congl. and some other churches, besides serving at the Lord's Table, have special charge of the poor members of the church. Among Presbyterians, their place is usually supplied by the elders; but in some Presbyterian churches (e.g., the Free Church of Scotland), and many in the United States, the offices of elder and deacon are kept distinct. In some denominations, deacons have charge of the secular affairs of the church. In the Church of England, and the Prot. Episc. Church in the United States, a deacon is a clergyman of the lowest order, receiving a special form of ordination, but differing in effect from a priest in not being allowed to consecrate the elements at the communion, or pronounce the absolution or benediction. For this, as well as for holding in England any benefice or church-preferment, priest's orders are necessary. The office is thus of little importance, except as affording an interval of probation before admission to priest's orders. As in the Rom. Cath. Church, its original function of caring in the name of the whole company of disciples for the poor, the aged, and the sick, has fallen into disuse.

DEACONESSES (*ancillæ, ministræ, viduæ, virgines, episcopæ, presbyteræ*): female ministers or servants of the church or Christian society in the time of the apostles (Rom. xvi. 1). They co-operated with the deacons, showed the women their place in the church-assemblies, assisted at the baptism of persons of their own sex, instructed those who were about to be baptized as to the answers they should give to the baptismal questions, arranged the *agapæ* or love-feasts, and took care of the sick. In the 3d c., it seems to have been also part of their duty to visit all Christian females who were suffering imprisonment, and to be hospitable to such as had come from afar. In very early times, they were consecrated to their office by ordination in the same manner as other ecclesiastical or spiritual personages; later, however, they were inducted into their office by prayer

without the imposition of hands. Until the 4th c., the deaconesses had to be either maidens, or widows who had been only once married, and 60 years of age; but after the council of Chalcedon, the age was fixed at 40. Their assistants were called *sub-deaconesses*. After the 6th c., in the Latin Church, and after the 12th c., in the Greek Church, the office of deaconess was discontinued; though the former has retained the name. In monasteries, for example, the nuns who have the care of the altar are called deaconesses. However, the duties of deaconesses are often performed with great tenderness and assiduity by members of various Rom. Cath. sisterhoods. In the Reformed Church of the Netherlands, also, those elderly females are called D. who take care of lying-in women and of the poor. The advantages resulting to a Christian community from such an order are too obvious to require exposition. It has been a serious misfortune to the church at large, that the office has been allowed to fall into disuse; and the widespread institution at the present day in the Prot. churches of Great Britain and America of Ladies' District-visiting Societies, Dorcas Societies, sisterhoods, etc., is an attempt to practically supplying, to some extent at least, the want of this primitive office. It is encouraging that there is now an evident movement toward the introduction of the order of deaconesses into the Church of England, and into the Prot. Episc. Church in the United States. A few Congl. churches have established the office, though they seem not yet to have systematized its work.

DEA'CON OF A TRADE: in Scotland, the president, for the time being, of an incorporated trade; formerly representing his trade or craft in the town-council. In Edinburgh and Glasgow the deacon-convener of the trades is still a member of the town-council. One of the duties of the office in former times was to essay, or try, the work of apprentices, previous to their admission to the freedom of the trade. See DEAN OF GUILD.

DEAD, a. *dĕd* [Goth. *dauths;* Icel. *daudr;* Sw. *död;* Ger. *todt*, dead]: deprived of life; deceased; without life; that never had life; senseless; inactive; perfectly still; tasteless; vapid; perfector complete, as a dead shot; wholly under the power of sin: AD. to the last degree; completely: N. the time when all is still and quiet as death, as winter and night. DEADLY, a. *dĕd'lĭ*, that may occasion death; fatal; destructive: AD. in a manner resembling death; mortally. DEAD'LINESS, n. the quality of being fatal or deadly. DEAD'NESS, n. state of being destitute of life, vigor, or activity. THE DEAD, n. plu. human beings without life; the departed. DEADS, n. plu. *dĕds*, in *mining*, any vein-stone or mine-stuff that does not contain enough of ore to make it worth removing from the mine; mine waste or rubbish. DEAD-ANGLE, in *mil.*, an angle in a fortification not exposed to any fire at all. DEAD-BEAT, a. quite exhausted; unable to move: N. a worthless fellow who sponges on others. DEAD-CENTRE, one of the two points in the orbit of the crank, in which it is in the line with the

connecting-rod; it is also called dead-point. DEAD-COLOR, in *painting*, a color that has no gloss, or reflecting quality. DEAD-COLORING, the first layers of colors in a picture, bringing out its parts. DEAD-DRUNK, rendered perfectly helpless through strong drink. DEAD-EYES, on a vessel, circular flattish wooden blocks, part of a tackle for extending the standing rigging, and for other purposes. DEAD-FLAT, in a *vessel*, one of the mid-ship timbers. DEAD-FREIGHT, compensation paid by one who freights a whole ship to the shipmaster for the space which he fails to occupy. DEAD-HEAD, superfluous length given to gun in casting, afterward sawed off; that piece on a casting which fills the ingate at which the metal entered the mold; a feeding-head or sullage-piece; one who habitually obtains admission to places of entertainment, etc., without payment; one on the free-list; a sponger. DEAD-HEAT [*heat*, a warm wave without stopping—from Ger. *hetzen*, fury, ardor: Icel. *hita*, boiling]: a race to be run over again by two horses, equal in a previous race, as if dead, or as if it never had taken place. DEAD LANGUAGE, one no longer spoken. DEAD-LATCH, n. a kind of latch whose bolt may be so locked by a detent that it cannot be opened from the inside by the handle or from the outside by the latch-key. The detent is usually capable of locking the bolt in or out, so that the device forms a latch, a dead-lock, or is made inoperative, as desired. DEAD-LETTER, at a post-office, a letter whose owner cannot be found. DEAD-LEVEL, a term applied to a flat country which offers facilities for railway or road making. DEAD-LIFT, or DEAD-WEIGHT, the weight of a lifeless or inactive body; a heavy weight or burden. DEAD-LIFT, in *OE.*, a last extremity; in a great strait or difficulty. DEAD-LIGHT, strong wooden shutter for the window of a ship's cabin for protection in storms. DEAD-LOCK, a lock without a spring or latch; counter movements and plans producing an entire stoppage. DEAD-MARCH, a solemn piece of music played on instruments at the interment of the dead, principally of military men. DEAD-NETTLE, a common plant like the nettle, but having no stinging property; the *Lămĭŭm album*, ord. *Lābĭā'tæ*. DEAD-POINT: see DEAD CENTRE, above. DEAD-RECKONING, calculation of a ship's place at sea, independently of celestial observations. The chief elements from which the reckoning is made are: The point of *departure*, i.e., the latitude and longitude sailed from, or last determined; the *course* or direction sailed in (ascertained by the compass); the rate of sailing—measured from time to time by the Log (q.v.); and the time elapsed. The various principles or methods followed in arriving at the reckoning from these data are known as *plain-sailing*, *middle-latitude sailing*, etc.: see SAILINGS. But the data themselves are liable to numerous uncertainties and errors, owing to currents, leeway (q.v.), fluctuations of the wind, changes in the declination of the compass, etc.; therefore the results arrived at by the D. have to be corrected as often as is possible by observation of the heavenly bodies: see NAVIGATION: LATITUDE: LONGITUDE. DEAD-RISING, that part of a ship's bottom where the floor-timbers terminate,

and the lower futtocks or foot-hooks begin. DEAD ROPES, such ropes as do not run in blocks. DEAD-SET, a determined resolution to bring matters to a crisis—in allusion to the action of a setter dog. DEAD-SHOT, a marksman who seldom misses his aim. DEAD-WALL, one that has no opening. DEAD-WATER, the water that closes in after a ship's stern when sailing. DEAD-TOP, a disease of young trees. DEAD-WIND, wind blowing directly against a ship's course. DEAD-WOOD, blocks of timber laid upon the keel of a vessel, especially fore and aft, fastened to the keel with iron spikes, to give solidity to the ends of the ship. DEADLY NIGHTSHADE, a highly poisonous plant, possessing narcotic properties in all its parts, the *Atrŏpă Bellădŏnna*, ord. *Solanāccæ:* see ATROPIA: BELLADONNA.—DEADEN, v. *dĕd'n*, to lessen force, vigor, or sensation; to blunt; to retard; to render spiritless; to smother, as sound; to cloud or obscure. DEAD'ENING, imp. *-nĭng*. DEADENED, pp. *dĕd'nd*. DEAD AS A DOOR NAIL, the knob of a door on which the knocker strikes, which could not but be dead. DEAD OF NIGHT, in the perfect stillness of night far advanced. DEAD OF WINTER, the very dullest and stormiest part of winter.—SYN. of 'dead, a': lifeless; inanimate; extinct; dull; gloomy; unproductive; unprofitable; monotonous; unvaried; sure.

DEAD, BURNING OF THE: see BURIAL: CREMATION.

DEAD, JUDGMENT OF THE: doctrine, and custom, in anc. Egypt. The papyrus rolls found with the Egyptian mummies contain a description of the fate of the departed subsequent to their death. Even in the least complete specimens, the most important scene is seldom wanting—that, namely, in which the dead is led by the hand of Ma, the goddess of Truth and Justice, into the judgment-hall of the nether world, before Osiris, the judge of the dead. The god's throne faces the entrance. In the middle of the hall stands a huge balance, with an ostrich feather, the symbol of Truth, in one scale, and a vessel in the form of a human heart in the other. A female hippopotamus appears as accuser. Above sit forty-two gods, each of whom specially presides over one of the forty-two sins from which the deceased has to clear himself. The gods Horus and Anubis attend to the balance, while the ibis-headed Thoth-Hermes, the justifier, writes down the result, which is naturally assumed to be favorable. Such is the judgment of the dead in the Egyptian Hades. But, according to Diodorus, a human judgment had already been passed upon the departed previous to burial. Before the sarcophagus was launched upon the holy lake over which it was to be ferried by Charon, the friends and relatives of the dead, together with forty-two judges, assembled on the shore. Each was permitted to bring an accusation against him, and if it were proved, the solemnities of burial were withheld. A false accuser, however, was severely punished. Even unjust and unpopular monarchs were deprived of sepulture by this process.

DEAD, PRAYING FOR THE: see PRAYER.

DEADENING OF NOISE IN MACHINERY: effected by use of rubber cushions under legs of work-benches, etc.; also, by resting each leg or support on a block in the middle of a small keg—fine sand or sawdust being filled in below, around, and above the block and leg. The noise and vibration of strokes even on an anvil may thus be greatly reduced.

DEAD-LETTER OFFICE: branch of the U. S. post-office dept. at Washington, where unclaimed, misdirected, and other non-deliverable mail matter is collected from all post-offices in the country for disposition. The period of 30 days during which such letters may remain in any post-office is established by law, as well as the method of sending them to the D.L.O. A list of letters unclaimed in any office within a given number of days is exposed where all can see it, and in many cities, published in the newspapers. At the end of 30 days all such letters, together with those addressed to a known fraudulent institution or firm, or on which the address cannot be readily deciphered, or from which the name of the out-of-town office of delivery has been omitted, are sent to the D.L.O., and there opened and examined. If they contain valuable inclosures they are registered; if the name and address of the party for whom they are intended appears within they are forwarded direct; if only the name and address of the sender can be ascertained the dept. makes the return to him; and if there are no clews by which the sender or intended recipient can be found, the postmaster-gen., has authority to dispose of the matter as he may deem best. Formerly letters on which postage was insufficiently prepaid were also forwarded to the D.L.O., and the persons addressed notified that the letters were held for insufficient postage and would be forwarded on the receipt of the shortage; but the law in this respect has been so modified that an insufficiently prepaid letter will be forwarded to its destination and delivered to the party addressed on the payment of the shortage. The postal laws are exceedingly liberal to the public. Any person temporarily leaving home or permanently removing to another one, whether within the same town or city, the same state, another state, or a foreign country, may have his letters forwarded without additional charge by leaving his new address with the postmaster of his former place of residence. As a rule the failure of a letter in prompt delivery is due either to the carelessness of the sender in addressing it, or to the neglect of the party addressed in not notifying his postmaster of a change of residence. Money and postage stamps inclosed in a non-deliverable letter are credited to the post-office dept.; bank checks and money orders not negotiable are frequently held several years for reclamation. Considering the vast quantity of mail matter handled daily in the United States and the carelessness of people, it is surprising that so small a proportion of letters goes astray and becomes 'dead.' During the fiscal year 1893–4, the D.L.O. found and delivered to the proper parties letters containing over $28,000 in money and over $966,000 in checks, drafts, and money orders; total number of letters returned to owners, 2,075,098; over 600,000 foreign letters were returned to the various offices of original reception. The number of

letters returned as unmailable was 482,696. The total number of letters, etc., handled was about 29,000 less than in the preceding year. The bulk of the foreign matter that goes astray in the United States consists of letters addressed to newly-arrived immigrants ignorant of the rules of the post-office dept., many of whom shift from place to place before making a settlement and nowhere leave a clew of their destination.

DEAD NETTLE (*Lamium*): genus of plants of the nat. ord. *Labiatæ*, having a 5-toothed calyx and a 2-lipped corolla, the upper lip arched, the lower lip trifid. The name D. N.—popularly in parts of England and Scotland, *Dee Nettle*—is also often extended to the genera *Galeopsis* and *Galeobdolon*, very similar to *Lamium*, the first of which is sometimes distinguished by botanists as Hemp-nettle, the second as Weasel-snout. *Lamium purpureum*, *L. incisum*, *L. album*, and *Galeopsis tetrahit*, are common weeds. It is probably to *G. tetrahit*, or *G. versicolor* (much larger plants, and rough with strong hairs), rather than to any species of *Lamium*, that the popular belief relates of a dangerous irritative power in the hairs of the D. N., if handled when dried as in haymaking. They do not seem to possess any poisonous property, but the subject may be deserving of attention.

DEAD SEA (ancient *Lacus Asphaltites*), called by the Arabs Bahr Loot, or *Sea of Lot:* in the south-east of Palestine; lat. 31° 10′—31° 47′ n., central between long. 35° and 36° e. It is about 40 m. long, with an average breadth of 9 m. The depth of the D. S. varies considerably: soundings in the north have given about 220 fathoms; this depth, however, gradually lessens toward the southern extremity, where the water is shallow. Its surface, lower than that of any water known, is 1,312 ft. below the level of the Mediterranean. The shape is that of an elongated oval, interrupted by a promontory which projects from the south-east. The D. S. is fed by the Jordan from the n., and by many other streams, but has no apparent outlet, its superfluous water being supposed to be entirely carried off by evaporation. Along the e. and w. borders of the D. S., there are lines of bold, and in some cases perpendicular, cliffs, rising in general more than 1,000 ft. on the w., and 2,000 ft. on the e. These cliffs are chiefly limestone, and are destitute of vegetation save on the e. side, where there are ravines, traversed by fresh-water springs. The n. shores of the lake form an extensive and desolate muddy flat, marked by the blackened trunks and branches of trees, strewn about, and incrusted with salt, as everything is that is exposed to the spray of the Dead Sea. The s. shore is low, level, and marshy, and in the highest degree desolate and dreary; the air is choking, and no living thing to be seen. On this shore is the remarkable mass of rock called Usdum (Sodom). It is a narrow rugged ridge of hill, extending 5 m. n.w., and consisting of rock-salt. Large blocks have broken off from this hill, and lie strewn in all directions along the shore, adding to its dreary and deathlike aspect. To the n. of Usdum, and at no great distance, is the supposed site of the ancient Sodom. Although the hills surrounding the D. S.

are principally stratified rock, igneous rocks also are seen; there are also quantities of post-tertiary lava, pumice-stone, warm springs, sulphur, and volcanic slag, clearly proving the presence here of volcanic agencies at some period. The neighborhood of the D. S. is frequently visited by earthquakes, on which occasions it has been observed that this lake casts up to its surface large masses of asphaltum, of which substance chiefly the cups, crosses, and other ornaments made and sold to pilgrims at Jerusalem consist. The long-entertained belief, that the exhalations from this lake were fatal, is not founded upon fact; birds have been seen flying over, and even sitting upon, its surface. Within the thickets of tamarisk and oleander, which here and there may be seen upon its brink, the birds sing as sweetly as in more highly favored quarters. A curious plant grows on the borders of the D. S., the *Asclepias procera*, which yields fruit called the Apples of Sodom, beautiful on the outside, but bitter to the taste, and when mature, filled with fibre and dust.

The *water* of the D. S. is characterized by the presence of a large quantity of magnesian and soda salts. Its specific gravity ranges from 1,172 to 1,227 (pure water being 1,000). The proportion of saline matter is so great, that while sea-water contains only 30 parts of salts in the 1,000 parts, the water of the D. S. contains about 250, or eight times more than that of the ocean. The saltness of the D. S. has been explained in several ways; but there is no need to advert to more than one. It is a feature of all lakes or collections of water without any outflow, that the water acquires an infusion of salt, its feeders constantly bringing in this material, while none can go off by evaporation. It may, moreover, be remarked that, if the D. S. was formerly at a higher level, and brought down to its present pitch by evaporation, a deposit of salt, such as we see on its banks, would be the natural consequence. Considerable deposits of common salt, sulphate of lime, and carbonate of lime have been formed along the bottom of the lake; and there is reason to believe that the deposits of rock-salt which occur in Cheshire, England, in Poland, and other places, have been formed at remote periods by depositions in lakes similar to those of the Dead Sea.

DEAD'S PART: in Scotland, the portion of the movable estate of the deceased which remains over, after satisfying the legal claims of his wife and children; so called, because it is with reference to this portion of his possessions alone that he possessed the power of disposal by will or testament. See MARRIAGE CONTRACT: SUCCESSION, PERSONAL: MOVABLE: KIN, NEXT OF.

DEAF, a. *dĕf* or *dēf* [founded on the notion of stopping an orifice; *dead* and *deaf* have the same primary origin: Goth *daubs;* Icel. *daufr*, deaf, dull of hearing]: without the sense of hearing; with imperfect hearing; inattentive; unwilling to hear; that will not be persuaded, as deaf to entreaty or reason. DEAF'LY, ad. *-li*. DEAF'NESS, n. lack of the sense of hearing; unwillingness to hear. DEAFEN, v. *dĕf'n*, to make deaf; to stun. DEAF'ENING, imp. *-nĭng*. DEAFENED, pp. *dĕf'nd*.

DEAF-MUTES.

DEAF-MUTES, or DEAF AND DUMB: persons suffering primarily from lack of hearing, thence with inability to speak. Persons who are born deaf, or who lose their hearing at a very early age, are dumb also; hence the compound term deaf-*and*-dumb. But the primary defect is deafness; dumbness is only the consequence. Children ordinarily hear sounds, and then learn to imitate them; that is, they learn to repeat what they hear other persons say. It is thus that every one of us has learned to speak. But the deaf child hears nothing; cannot therefore imitate, and remains dumb.

Persons who lose their hearing later in life are not to be classed among deaf-mutes. Having learned to speak before their hearing was lost, they can readily communicate with others, though deaf themselves; and if they are educated, there are still open to them all the stores of knowledge contained in books, from which the juvenile deaf and dumb, ignorant of all written and spoken language, are excluded. It is this latter class alone which is contemplated in census enumerations, and for which institutions for the education of the deaf and dumb are especially designed.

The term 'deaf and dumb' is unfortunate, as embodying the error that the primary defect is twofold. The organ of hearing is wanting, but the organs of speech are present; they merely lack the means of exercise. The ear is the guide of the tongue; and when the ear is doomed to perpetual silence, the tongue is included in the ban; though, if we could by any means give to the ear the faculty of hearing, the tongue would soon learn for itself to fulfill its proper office. To correct the error involved in this apparent misnomer, some authorities use the term *deaf-dumb;* and *deaf-mute* is now the customary expression in the United States, as in France it is *sourds-muets.*

Though the affliction was mentioned at the outset of man's history, by Moses; spoken of frequently in the Old and New Testaments; alluded to by the poets, philosophers, and law-givers of antiquity—there is no account of any attempt at educating the deaf until the 15th c.; no school existed for them until the middle of the 18th; nor could it be said that education was freely offered, and readily accessible, until within the last 50 years.

Some isolated attempts with various success had been made before the 18th c. at long intervals, to give instruction to one or two deaf-mutes. These several cases excited some attention for novelty; but seem to have been soon forgotten. Bede speaks of a dumb youth being taught by one of the early English bishops, known in history as St. John of Beverley, to repeat after him letters and syllables, and then some words and sentences. The fact was regarded as a miracle, and was classed with others alleged to have been wrought by the same hand. From this time, eight centuries elapsed before any record of an instructed deaf-mute occurs. Rodolphus Agricola, born a Gröningen 1442, mentions as within his knowledge that a deaf-mute had been taught to write, and to note down his thoughts.

In 1501, was born, at Pavia, Jerome Cardan (q. v.), who discovered the theoretical principle on which the instruction of the deaf and dumb is founded. He says: 'Writing is associated with speech, and speech with thought; but written characters and ideas may be connected together *without* the intervention of sounds,' and he argues that, on this principle, 'the instruction of the deaf and dumb is difficult, but it *is possible.*' It was in Spain that this principle was first put into practice by Pedro Ponce, Benedictine monk, born at Valladolid 1520; and a century afterward by another monk of the same order, Juan Paulo Bonet, who also published a work upon the subject, the first step toward making the education of the deaf and dumb permanent, by recording the experience of one teacher for the instruction of others. This book contains, besides much valuable information, a manual alphabet identical in the main with the one-handed alphabet now in common use in the schools on the continent of Europe and in America. When the art died away in Spain, it was taken up by Englishmen, and forthwith assumed an entirely new aspect. Dr. John Bulwer published, 1648, his *Philocophus, or the Deafe and Dumbe Man's Friend;* Dr. William Nolder published his *Elements of Speech, with an Appendix concerning Persons Deaf and Dumb,* in 1669; and Dr. John Wallis, Savilian, Prof. of Mathematics in the Univ. of Oxford, both taught the deaf and dumb with great success, and wrote copiously upon the subject. In 1662, one of the most proficient of his pupils was exhibited before the Royal Soc., and in the presence of the king. Before the close of the 17th c. many works of considerable merit appeared, the chief of which are the *Surdus Loquens* (the Speaking Deaf Man) of John Conrad Amman, physician of Haarlem; and the *Didascalocophus,* or Deaf and Dumb Man's Tutor, of George Dalgarno. The latter is the first English writer who gives a manual alphabet. The one described by him, and of which he was the inventor, is, probably, the one from which the present two-handed alphabet is derived. In 1760, the Abbé de l'Epée established a school for deaf-mutes in France, adopting a system of gesture signs as the medium of instruction, which was further developed by his pupil and successor Abbé Sicard. In the same year Thomas Braidwood established near Edinburgh a deaf-mute school, adopting the oral or articulatory method. In 1778 the first public institution for deaf-mutes was established at Leipsic through the efforts of Heinicke, the great upholder of the oral method. Braidwood's school was removed to Hackney, near London in 1783, and in 1792 the first public institution in Great Britain for the instruction of deaf-mutes was founded at Bermondsey, this was the origin of the London Asylum in Kent Road, opened in 1807.

Several people in the U. S. sent their deaf children to England to be educated, and the results were so satisfactory that an agitation was begun for the establishment of a school in America. In 1812 a small school for the

deaf and dumb was opened in Virginia; this was the first of its kind in the country. It was soon given up, as was a similar effort in N. Y. Shortly afterward Thomas Hopkins Gallaudet was sent abroad to study methods of instruction; he went first to Great Britain, but could not obtain entrance to the schools. After nine months he gave up hope of acquiring the Braidwood method and spent at the Paris school the three remaining months of the year. This time being far too short he induced a deaf-mute teaching in the school to accompany him to America; this was the brilliant and accomplished Laurent Clerk. The French method or sign-language method was improved and further systematized by our early teachers and in this form was the basis of instruction in all our schools for half a century. During the absence of Dr. Gallaudet the Connecticut Asylum at Hartford had been incorporated but soon changed its name to the American Asylum. Upon Dr. Gallaudet's return he and Mr. Clerk traveled for eight months among prominent cities in behalf of the cause of the deaf. On 15 April 1817 school work began at Hartford with seven pupils. During the first year 33 pupils came. This was the first permanent school in the country. The founders of our schools differing from practice abroad, immediately established theirs on a permanent basis. Private aid was necessary at first, but no sooner had the feasibility of the work been shown than public moneys were granted.

In 1818 a school was opened in New York under a teacher from Hartford. In Philadelphia a little class started in 1819 was organized as an institution in 1820. In 1819 Massachusetts had provided an appropriation for the education of 20 indigent pupils at Hartford, and in 1825 New Hampshire and Vermont adopted the same policy, being soon followed by other States. Thus, through the efforts of the founders of the Hartford school, the policy of educating deaf-mutes at the public expense was firmly established in the United States, and has been adopted with few exceptions. Some of the western States secured means for the education of deaf-mutes by constitutional provision. Two years after the founding of the Pennsylvania school, Kentucky followed with its institution, being the first to be supported by a State. Ohio and Virginia soon followed. Thereafter institutions sprang up rapidly in the South and West. In 1857 there was incorporated by Congress the Columbia Institution at Washington, D. C., which requires special mention. Though originally intended as a school for educating the deaf children of government beneficiaries, a change largely owing to the energy of its principal, Dr. Edward M. Gallaudet, soon enabled the institution to confer collegiate degrees. It was then divided into two departments, the advanced taking the name of the National Deaf-Mute College (now known as Gallaudet College).

In 1901 Germany led the European states in the number of schools for the deaf, having 98. In France there were

70 such schools, in Great Britain and Ireland 46, in Italy 35, in Austria-Hungary 19, in Norway and Sweden 17, in Switzerland 13, in Russia 13, in Spain 7. There are about 23 other institutions for deaf-mutes in various parts of Europe, and India and Japan have established a few schools. In Canada there are 7, and the United States leads the world with 103 public and 15 private institutions of this nature.

The two chief methods employed have already been mentioned—the sign method and the oral or articulatory

One-handed Alphabet.

method. The sign method was suggested to Abbé de l'Epée by seeing two deaf-mute sisters conversing by means of gestures, and has the advantage of being the natural means by which deaf-mutes seek to communicate with others. The language of signs is ideographic, "being readily expressive of ideas and emotions" rather than of phraseology. This method is also called the manual method, since the gestures are made, and the ideas conveyed chiefly by the hand. Spelling by hand is not a part of the sign language, but is frequently acquired in addition to

the latter and is very commonly used, being an art easily acquired. There are two kinds of manual alphabets, the double-handed, where the letters are expressed by the disposition of the fingers of both hands; and the single-handed in which the letters are formed with the fingers of one hand.

By the oral method articulation is learned by the deaf-mute as a set of movements and sensations in the organs of speech. It is taught by pointing out to the pupil the

Two-handed Alphabet.

positions of the lips, teeth, and tongue, in pronouncing the vowels and consonants; by making him feel with his hands all the perceptible movements and vibrations of the throat and other organs which are requisite for their pronunciation; and by using diagrams, etc. He is then required to imitate these positions, and to force a quantity of air from the lungs sufficient to produce the sounds, and is taught to read the articulations of others, by observing the position of the organs and the countenance. The facility of doing this will depend much upon the pliability of the

organs of speech, and the nature of the language to be learned.

The history of the rise of the oral method in the U. S. is interesting. As has been said, the manual method reigned supreme for the first 50 years of the work. In 1843 Horace Mann, secretary of the Massachusetts State Board of Education, and Dr. Howe, director of the Perkins Institution for the Blind in Boston, made a tour of Europe. In his next annual report Horace Mann praised the oral method as taught in Germany, stating that it was superior to the method employed in America. The report was widely read, and caused no little commotion among our teachers of the deaf. Several went abroad to see for themselves, but did not agree with Horace Mann, and little change was then made in American methods. Still as a result of their recommendations, classes in articulation were introduced into several schools. Later, in 1864, there was an agitation in Massachusetts for the incorporation of an oral school in that State, and a small private school of the kind was soon opened near Boston. In 1867 the Clarke Institution (named for its founder) was incorporated by the Massachusetts legislature, and was opened as an oral school. In the same year a former teacher of an Austrian school opened in New York what soon became the New York institution for the improved instruction of deaf-mutes. Dr. Edward M. Gallaudet after investigations abroad advocated the introduction of articulation into all the schools of the country in conjunction with the manual method. A conference of principals of American institutions adopted resolutions in the line of President Gallaudet's recommendations, and classes in articulation were very generally introduced. During the next few years a gradual movement abroad toward the abolition of signs was evident; and at the second international conference at Milan in 1880, an overwhelming majority of the delegates present voted in favor of the oral method. American instructors of the deaf paid more and more attention to the question of methods, and conventions of articulation teachers were held. In the meantime Dr. Alexander Graham Bell had introduced to teachers his father's system of visible speech (q. v.). The characters of the alphabet on which this system is founded are intended to reveal to the eye the position of the vocal organs in the formation of any sound which the human mouth can utter. A similar but simpler system of visible speech symbols had been independently worked out by a Mr. Zera Whipple, of Mystic, Conn.; and more recently the Lyon phonetic manual has been devised, which is founded on the principle of visible speech and may be written in the air by the fingers. At times the controversy over methods has been bitter. The use of sign language in the school room is deemed by many teachers extremely detrimental to the acquisition of the English language, which all our educators agree is their chief end and aim for their pupils. A few dispense with signs *in toto*

just as soon as possible; but the combination of the two systems is now most generally favored, and used by the schools, which call themselves "combined system" schools. The controversy is less bitter, and has become only a generous rivalry in which all are seeking for the best means of instructing the deaf. The Bell system is also in use in several institutions, having been introduced into the Clarke Institution in 1872.

For many years the parent school at Hartford was parent in the sense of providing principles and teachers for other schools. The New York institution has also furnished schools with many officers and teachers. It is only within comparatively recent years that normal classes, as such, have come to exist in a few of the schools,—among others the Clarke Institution, the Wisconsin Phonological Institute, the school at Bala, Pa., and Gallaudet College.

Public day schools for the deaf have sprung up in various places. The Horace Mann School of Boston is a notable example. They fill an unquestioned need, as many parents refuse to send their deaf children off to an institution. A still further movement toward decentralization has come to pass in Wisconsin. Whenever in this State a few deaf children can be gathered near their homes, State aid will be given to pay teachers sent there to teach them. And this movement is tending to become more and more general. All these day schools spread the oral method. An important effect of the rise of this method has been the lowering of the age when deaf children are received, and of lengthening their term of instruction; also of largely increasing the number of women teachers employed. The Home at Bala for the training in speech of little deaf children before they are of school age, takes them at the age when normal children learn to talk and teaches speech by talking to them and having them talk back as if they heard. There are several private oral schools for the deaf in this country where the pupils pay tuition. One of the best is the Wright-Humason school in New York. With the lowering of the age of pupils, kindergarten methods have been made use of more and more; though no true kindergarten can be conducted in schools where language comes so hard and so late, where even natural signs are arbitrarily interdicted, and where there can be no music. But the occupations and the games are widely applicable and are now universally used. The course of training at American schools for the deaf has always been practical. Indeed, industrial training is almost essential for those young people who would form industrious habits and facility in the use of tools, that will put them on their feet when they enter the world of labor; for most deaf pupils will have to work for their living. The trained deaf are not at all disqualified from self-support by simple inability to hear. In their schools general manual training is followed with a pupil until, for one reason or another, he chooses his trade or it is chosen for him. The general equipment for trade teaching is excellent.

DEAF-MUTES, in Law: anciently in the same position as idiots and the insane: the Roman law held them incapable of consent, consequently unable to enter into a legal obligation or contract. Now, in Britain and the United States, the amount of their capacity is a question of fact, which, in cases of doubt, is referred to a jury. In the same manner, a deaf-mute will be examined as a witness in regard to a fact to which he is capable of bearing testimony, and the examination will be conducted in the manner which seems most likely to elicit the truth. (Best, *Law of Evidence*, p 201.) The same principle will govern the estimate of his responsibility for crime. (Stephen's *Com.* iv. 461.) It is of course legally, as it is physically, impossible that a mute should act as a juror.

DEAFNESS: lack of the sense of hearing. It may be complete or partial; may affect both ears or only one; may date from birth, be permanent or only temporary; and is often one of the distressing symptoms of advancing age. The causes are numerous. The hearing apparatus is of extraordinary intricacy (see AUDITORY NERVE); and though contained in a little nut of densest bone (the petrous portion of the temporal), still it is exposed to many deteriorating influences; and very slight causes may disarrange the exquisite adjustment of its parts. 1. The auditory nerve may itself be unsusceptible to the stimulus of sound, from some diseased condition at its origin in the brain, or at its final subdivision in the labyrinth, this is termed nervous deafness. 2. The structures which conduct the vibrations of sound to the labyrinth may be faulty, from accident or disease. 3. The passage leading to the tympanum or drum may be blocked up. 4. The cavity of the drum may have ceased to be resonant, owing to deposits from inflammatory attacks, or to loss of its membrane, or to exclusion of air by obstructions in the passage between it and the gullet (the Eustachian tube).

Nervous deafness may be caused by a sudden concussion, as from a 'box on the ear,' or a general shock to the whole body, as in the case of Dr. Kitto, who lost his hearing, when a boy, from a fall from the top of a house. The concussion from loud sounds suddenly taking the ear unawares, before its small muscles have time to prepare themselves for the shock, causes the deafness which follows the firing of cannon. Even a loud yell close to the ear has been sufficient to destroy the hearing-power on that side. As such an accident is generally accompanied by an increased flow of blood to the part injured, it may be relieved by the application of leeches, applied behind the auricle, and the ear should for some time be protected from loud sounds as carefully as possible. In some of these cases the nerve gradually recovers its sensibility, but in many the deafness continues, and is accompanied by a distressing singing in the ears. Exposure to cold affects the auditory nerve; and gouty persons, or those who are suffering from the poisons of typhus fever, scarlatina, measles, mumps, etc., frequently become deaf. Some medicines, as quinine, produce nervous deafness; so do de-

bility and mental excitement, but all these causes seem to act in one way—viz., to increase the flow of blood to the ear—and should be treated accordingly.

The solid conductors of sound to the auditory nerve may be injured or diseased, so that the vibrations are interrupted. One curious cause of deafness was some years ago shown to exist by Joseph Toynbee of London—viz., an increasing stiffness in the little joint by which the stirrup-bone moves in the oval window of the vestibule; this stiffness prevents the base of the stirrup pressing inward sufficiently to affect the contents of the labyrinth, therefore it ceases to keep the auditory nerve *en rapport* with the membrane of the drum. This condition may be recognized by the patient losing the power of adapting his hearing to varying sounds. Two persons speaking at once prevents his hearing the voice of either; but there is a constant buzzing in the ear, and he gets deafer and deafer day by day. This curious disease is frequently associated with gout and rheumatism, and in its earlier stages may be influenced by the same remedies as these; but if once established, it is incurable.

Sound reaches the auditory nerve through the vibrations of the bones of the head, but chiefly through the external opening in the auricle, the passage leading from which is shut at the depth of an inch and a quarter from the surface by the membrane of the drum stretching across it. Should this passage be blocked up, so that the sounds can no longer pass along it to impinge upon the membrane, either total or partial deafness must result.

The most common obstruction is an accumulation of the wax secreted by a small ring of glands near the orifice. The object of this cerumen or wax is to catch the particles of dust floating in the atmosphere; but sometimes it is harder than usual, and is no longer gradually expelled by the movements of the jaw in speaking and eating. At last, it fills the passage in the form of a hard plug, and sounds can neither pass through it nor by its side; if left, it gradually causes serious changes in the shape of the passage, and even symptoms resembling diseases of the brain. Sometimes foreign bodies find their way into this passage, or tumors grow in it, and no unprofessional attempts should be made to remove them, lest the membrane of the drum be injured. It is but seldom that any instruments are necessary in addition to a stream of water thrown briskly in by means of a syringe, with a nozzle smaller than the circumference of the passage. Should the wax be very firm and hard, it is well to soften it by dropping in some oil or an alkaline solution. But even a stream of water, unless great care be taken, may injure or burst the delicate membrana tympani, and the proceeding leave the patient suffering from a more serious condition than before.

A membrane, to be resonant, must have air on both sides of it, and the membrana tympani obtains this essential by means of the Eustachian tube, the lower orifice of which, on each side of the [illegible], opens for a brief period

at each act of swallowing, and admits a small quantity of air, which ascends into the tympanic cavity, if the tube is in healthy condition; but frequently in persons suffering from relaxed mucous membrane, the Eustachian passage becomes swollen and impassable, or blocked up by some thickened mucous secretion. During a common cold, persons often suffer from this cause of deafness. It has been supposed by some that enlarged tonsils may interfere with the pharyngeal opening of the tube, and with that view they cut portions off them occasionally with great benefit to the condition of throat in which these glands are enlarged; but the latter are situated below and in front of the Eustachian tubes, and cannot be the immediate causes of the obstruction.

In some cases, the membrane of the drum may be perforated; and though the mere perforation is not sufficient to cause more than a slight degree of deafness, if the mucous membrane lining the tympanic cavity be thickened at the same time, the person is usually able to hear only the loudest sounds. If the perforation be stopped up, however, the air confined in the tympanic cavity vibrates sufficiently to stimulate the auditory nerve, through the round window of the labyrinth, and a useful degree of hearing is restored. In 1848, Mr. Yearsley of London showed that a small pellet of cotton-wool might be used for this purpose. It should be moistened with fine oil, and inserted on the end of a probe. Patients generally learn how to stick it neatly into the aperture themselves. It should be removed every three or four days, or oftener, should cleanliness require it.

Joseph Toynbee has invented an artificial membrana tympani of vulcanized India-rubber, attached to the end of

Artificial Membrana Tympani.

a fine silver wire, by which it can be inserted or withdrawn. These beautiful little instruments may now be obtained of every surgical instrument-maker, and are at least worth trying in cases of perforated membrana tympani, as they often do good, can do no harm, and are very cheap. The India-rubber having been pared to the size likely to fit the individual's ear, it is moistened with warm water, and gently passed down the auditory passage; the sensations of the patient will easily decide when it has gone far enough, and he gladly discovers, by the sound of his own voice or that of the surgeon, that his hearing has been suddenly improved.

The deafness of aged persons has been shown, by Joseph Toynbee, to be generally caused by the effects of previous

inflammatory attaeks, and may frequently be much relieved by counter irritation behind the ear, alterative medicines, and washes which restore the healthy condition of the throat and the external auditory passage.

There are numerous 'cures for deafness' advertised from time to time; some are harmless though useless, others are useless but very dangerous, owing to the readiness with which inflammation may be set up, and the liability of the latter to extend to the brain or its membranes. The diseases which affect the ear are the same as affect other organs, and require to be treated upon the same prineiples. It is advisable, as soon as the first symptoms of approaching deafness are felt, to apply to one of the regularly qualified practitioners who devote themselves entirely to the subjeet, and to have nothing to do with so-called *cures*, which benefit only the vendors.

The best English works on the subject are *Practical Observations on Aural Surgery*, by William R. Wilde of Dublin, and *The Diseases of the Ear*, by Josepb Toynbee of London.

DEAK, *dā'âk*, Franz: Hungarian statesman: 1803–76; b. Kehida, county of Zala. Having studied law at Raab, he began to praetiee as advocate in his native county, and soon became noted for eloquenee and enlightened patriotism. Elected in 1832 to the national diet, he, as leader of the liberal opposition, opposed, by legal and constitutional means, every attempt of the imperial government to infringe on the constitutional rights of his country. This firm and moderate poliey enabled him to effect more than one reeonciliation between Hungary and the Austrian emperor as her king—temporarily in 1840, and in 1867 more permanently. While upholding the independence of his country, he labored for its internal improvement, promoting measures for the elevation of the peasantry, and advoeating the abolition of the odious exemption of the nobility from taxes. His views on this last point displeased the party of the nobles, and for some years after 1840 his county did not return him to the diet. He eontinued to guide the eouneils of the moderate liberal party, and in spite of his aversion to extreme measures, he promoted the assoeiation for national defense, in the view of a possible struggle with Austria. After the revolution of 1848, March, he became minister of justiee in the cabinet of Count Batthyanyi (q.v.), and formed the project of effecting a general reform in the administration of justiee in Hungary whieh, however, the war rendered impossible. D. used every effort to come to an arrangement with Austria which should ward off the war. On Kossuth's coming into power (1848, Sep. 17), D. resigned his portfolio, and retained only his place in the diet. In the last months of 1849, at the approach of Prince Windischgrätz, he proposed to sue for peace, and was one of the deputies sent for this purpose to the Austrian general. That step failed, and D. was even for some time a prisoner at Pesth; he then withdrew from public affairs, and retired to his estate. When the Hungarian revolution was suppressed, he refused the invitation sent him by M. de Schmerling, minis-

ter of justice at Vienna, to take part in the legislative conferences, as he disapproved of the Austrian policy with regard to Hungary. He did not return to public life till 1860, when a constitution was granted to his country.

On hearing of the arrest of Count Ladislas Téléki, D. set out for Vienna with M. Eötvös, and procured the release of his countryman, as well as the promise of an independent Hungarian ministry. Returned by the city of Pesth to the diet 1861, he became in it the leader of the moderate party, at the same time that the extreme party collected round Count Téléki. The death of the latter (May 8) destroyed the only influence which could counterbalance that of D.; and the diet appointed him to draw up the address to the emperor. D. demanded, in that paper, the constitution of 1848, a Hungarian ministry resident in Pesth, the return, without restriction, of the exiles, and the restitution of their property. Rejected at first by the emperor, this address was again drawn up with some modifications in the details; the emperor answered it by a rescript which with difficulty dissimulated his repugnance to such an arrangement; and in his turn, D., in name of the diet, protested publicly against the imperial rescript. On May 23, the emperor pronounced the dissolution of the Hungarian diet, which protested anew, under the direction of D., against the illegality of the measure which dispersed them. Among the events consequent on the war between Austria and Prussia, 1866, was the final triumph of D.'s policy in the establishment of a constitutional relation between Hungary and Austria. At a general election, 1869, the results of which were favorable to his policy, D. was, by an overwhelming majority, returned again for the city of Pesth. He died at the age of 73, and his funeral was a truly national event. A memoir was published, London 1880.

DEAL, n. *dēl* [Goth *dails;* Ger. *theil;* Gael. *dala;* Skr. *dala*, a part, a lot, a portion: comp. Gael. *dail*, trust, credit]: his portion given to each; an indefinite quantity; a portion; a great part: V. to give to each his portion or lot; to distribute, as cards; to divide into portions; to give gradually; to transact business; to traffic; to act; to behave well or ill. DEAL'ING, imp.: N. conduct in relation to others; behavior; intercourse for trade, etc.; trade: business. DEALT, pt. and pp. *dĕlt*, distributed; given in succession. DEAL'ER, n. one who. TOD EAL IN, to trade in; to practice. TO DEAL WITH, to trade with; to be a customer to. TO DEAL BY, to treat well or ill. TO DEAL THE CARDS, to give to each player the proper number or share. A GREAT DEAL, very much to the purpose.

DEAL, n. *dēl* [Sw. *tall;* Swiss, *dähle*, pine-tree, a fir. Icel. *talga*, to hew: Ger. *diele*, a board]: a board or plank of wood, generally of the pine or fir. DEALS is, in England, and to some extent in America, the trade-name for fir-boards exceeding 6 ft. in length and 7 inches in width. They are also occasionally called 'planks,' though this term is now somewhat loosely applied. Pieces of smaller width are called

'battens;' of less length, 'deal ends.' Deals are usually 3 inches thick, and when sawed into thinner pieces, these are called 'boards.' When a deal is sawed into twelve or more thin planks, they are called 'leaves.' There is considerable exportation of deals from N. America to Britain. Sweden and Norway are extensive sources of supply. Drammen is the principal Norwegian timber port, though the general name for the deals from Norway is 'Christiania deals,' named from the Norwegian capital, where the principal timber-merchants reside, and through which the business of the trade is chiefly transacted. For the various qualities of deals, and their applications, see TIMBER.

DEAL, *dēl*: municipal borough, maritime town and sea-bathing place, in the east of Kent, on a bold open beach, near the s. extremity of the Downs, between N. and S. Foreland, 18 m. e.s.e. of Canterbury, 8 m. n.n.e. of Dover. It has three streets parallel to the beach, and others stretching into the country. A fine anchorage extends 7 or 8 m. between D. and the Goodwin Sands. D. has arisen mainly to supply the wants of vessels which are often detained, 400 or 500 at a time, by the winds in the Downs. The chief branches of industry are connected with maritime pursuits, boat-building, sail-making, piloting or hoveling, victualling and naval stores. D., for parliamentery purposes, is united with Sandwich (q.v.) and Walmer. It has been one of the Cinque Ports since the 13th c. Of the three castles built by Henry VIII. 1539, Deal Castle is now a private residence; Sandown Castle, n. of D., was pulled down in 1864 on account of the inroads of the sea; and, to the s., Walmer Castle is now the official residence of the warden of the Cinque Ports. At Walmer Castle, the Duke of Wellington died 1852. Julius Cæsar, with two legions, in 82 ships, landed near D. B.C. 55. Between 150 and 200 vessels annually enter the port. Pop. 9,000

The DEAL BOATMEN, an enterprising and courageous body of men, are, like some of the other boatmen of that coast, locally known as 'hovellers.' They have become noted for giving assistance to ships in distress, and for saving lives of crews and passengers. Besides performing these services, they have been useful in carrying off provisions to outward-bound vessels, and in bringing ashore mail-bags requiring to be forwarded by express. Latterly, in consequence of steam-tugs being much employed in expediting outward and inward bound vessels, and also because of the landing of mails from many foreign countries at Falmouth and other places, to be forwarded to London by railway, the occupation of the Deal boatmen is nearly gone, and the community has sunk into poverty. Benevolent exertions have been made in their behalf. The community may be expected to diminish in proportion to the actual wants of navigation on the coast.

DEALFISH (*Trachypterus*): genus of fishes of the ribbon-fish family, having the body much compressed, and so named D. from the resemblance of the form to a piece of

deal—a resemblance which is increased by the dorsal fin extending along the whole length of the back. The tail-fin is peculiar, rising almost vertically from the horizontal line of the vertebral column, as if it had met with some accident, and assumed a new position. One species (*T. Bogmarus*) the VAAGMAER of the Icelanders and Norwegians, sometimes occurs on the most northerly British coasts, but is

Dealfish, or Vaagmaer.

not common even on those of Iceland, and is apparently a deep-sea fish. It is large, 4 to 8 ft. in length, of silvery color, with minute scales. Other species are found in the Mediterranean.

DEAL ISLAND: in Bass's Strait, between Australia and Tasmania: it has a light-house 880 ft. above the sea.

DEAN, n. *dēn* [OF. *deien;* F. *doyen;* Dut. *deken*. the head of a collegiate body—from L. *decānus*, the chief of ten—from *decem*, ten]: the second dignitary of a diocese; an officer in the universities of Oxford and Cambridge (one of the fellows) appointed to see to the discipline of the college, especially as to attendance at chapel and hall; the chief or head of a faculty. At Christ Church, Oxford, which is a cathedral, the dean is master of the college. DEAN'ERY, n. *-ĕr ĭ*, the office or revenue of a dean; the residence of a dean. DEAN'SHIP, n. the office. DEAN AND CHAPTER, the title of the governing body of a cathedral. RURAL DEANS, clergy appointed by the bishop to inspect a certain number of parishes, and preside at the ruridecanal chapters. DEAN OF GUILD, in *Scotch burghs*, pres. of the mercantile body called the Guild-brethren or Guildry; formerly a judge in mercantile and maritime law, within the burgh, but for a long time now rather a kind of Scotch ædile (q.v.), having charge of erection, demolishment, or repair of buildings, according to law. DEAN OF FACULTY, in *Scot.*, pres. of the faculty of incorporated advocates or barristers: see ADVOCATES, FACULTY OF. DEAN OF GUILD COURT, in *Edinburgh*, council or court with authority over erecting, demolishing, or materially altering any building.

DEAN, in Ecclesiastical Affairs: second dignitary of a diocese. The institution of deaneries, as of other ecclesiastical offices of dignity, bears a resemblance to the methods of ancient civil government. Thus, for the preservation of civil order, every hundred consisted of 10 districts called tithings, and in every tithing was a constable or civil dean. In conformity to this, the spiritual governors,

the bishops, divided each diocese into deaneries or decennaries [Dat. *decem*, ten], corresponding to tithings, each of which was the district of 10 parishes or churches, over every one of which a D. was appointed, who in the cities or large towns was called the D. of the city or town, and in the country *rural dean*. It has been supposed, but on no certain authority, that the D. of a chapter was appointed to superintend 10 canons; but it is more probable that the name was given to the office from its analogy to those above described. In the English Church, the following dignitaries bear this title:

1. In the province of Canterbury, it is part of the dignity of the abp. to have prelates as his officers, and of these the bp. of London is his provincial D.; and when a convocation is assembled, the abp. sends to him his mandate for summoning the bps. of the province. This is the sole example of the kind.

2. *Honorary Deans*, as the D. of the Chapel Royal of St. James's.

3. *Deans of Peculiars*, as of Battle in Sussex, founded by William the Conqueror in memory of his conquest. There are also the Deans of the Arches in London, of Bocking in Essex, and of Croydon in Surrey, who have jurisdiction, but no cure of souls.

4. *Deans of Chapters*, as at Canterbury, St. Paul's etc., governors over the canons in cathedrals and collegiate churches. Their appointment is in the direct patronage of the crown, which may appoint by letters patent; and the D. so appointed is entitled to be installed. The D. of a chapter must reside eight months in the year, and he may hold one benefice with his deanery. The income of the office is, in the case of Durham, £3,000; of St. Paul's, Westminster, York, and Manchester, £2,000; of other cathedrals, £1,000, except St. Davids and Llandaff, which have £700: see CATHEDRAL.

5. *Rural Deans*. These are very ancient officers of the church, but custom gradually transferred their duties to the archdeacon, as in the visitation of churches, parsonage-houses, etc. They may, however, act as deputies to the bishop and archdeacon; and of late the office has been revived with great advantage; and in well-ordered dioceses affords a useful channel of communication between the bishop and his clergy, and a means of joint action in matters affecting the church. There are altogether nearly 600 rural deaneries in England and Wales.

DEAN OF THE CHAPEL ROYAL, in Scotland: office held by six (formerly three) clergymen of the Established (Presb.) Church, to which they are appointed by the crown. The benefice of the Chapel Royal, instituted by James V., was richly endowed, but it has been disputed whether the revenues now enjoyed by the deans belonged originally to the Chapel Royal of Stirling or to the Chapel Royal of Holyrood. The Chapel Royal is noticed as in full operation in Stirling in 1540. During the reign of Queen Mary, the Chapel Royal seems to have been at Holyrood. In 1571,

after the Reformation, the name of Johne Duncaneson appears as minister of the Chapell Royall, or King's House at Stirling, where James VI., then very young, resided; while at Holyrood the minister was apparently the regular parish minister of Canongate, and not connected with the Chapel Royal. Afterward, when the royal residence became fixed at Holyrood, the Dean of the Chapel Royal officiated in the chapel. The chapel at Stirling was left to decay; whereas during the reigns of James VI., Charles I., Charles II., and James VII., the Chapel Royal of Holyrood was repaired and embellished. The last of the Stuarts laid out considerable sums for the purpose only the year before the revolution. The revenues of the benefice fell to the crown, *jure coronæ*, on the abolition of Episcopacy 1690, and have since been gifted at the royal pleasure: see TEINDS. In 1858, the annual rental divided among the three deans was £2,018. The duties of the office used to be nearly nominal; but on the foundation of the chair of Biblical criticism in the university of Edinburgh 1846, it was endowed with one-third of the revenues, the prof. becoming one of the three deans. The Universities Commission, 1858, recommended that when the requisite vacancies occurred, the revenues should be divided into six parts, attached respectively to the chairs of divinity and Biblical criticism in Edinburgh Univ. (the latter receiving two-sixths of the whole), Biblical criticism in Aberdeen Univ., Biblical criticism in Glasgow Univ., and church history in St. Andrews Univ. This arrangement is now in operation. Besides these five deans, the Dean of the Order of the Thistle bears the title of Dean of the Chapel Royal, but draws none of the revenues.

DEANE, *dēn*, JAMES: 1748, Aug. 20—1823, Sep. 10; b. Groton, Conn.: Indian missionary. He accompanied Rev. Mr. Mosely on his mission to the six nations of Indians in N. Y. 1760, graduated at Dartmouth College 1773, served as missionary to the Canadian Indians 1773–4, engaged in pacifying the northern Indians by order of congress, was appointed maj. in the continental army and stationed at Fort Stanwix as Indian agent and interpreter captured by a savage band, and saved from death by the intercession of some squaws and at the close of the war was given a 2-mile, tract of land near Rome, N. Y., by the Oneida Indians. Subsequently he exchanged this land for some in Westmoreland, Oneida co., where he settled, was a judge many years, and held other public offices. The village of Deanesville was named after him.

DEANE, SILAS: 1737, Dec. 24—1789, Aug. 23; b. Groton, Conn.: diplomatist. He graduated at Yale College 1758, engaged in mercantile business, and was a member of the continental congress 1774–76. In the latter year he was sent to France on a secret political and financial mission, and there secured the services of Lafayette and a number of other foreign military officers, and assisted in negotiating treaties of friendship and trade between the United States and France. In 1777 he was charged with extravagance in the management of his business in France

and recalled. Soon afterward he returned to France to procure documents to prove his integrity before congress, but found the govt. hostile to him on account of the reports from home. Discouraged with the inability to vindicate his official conduct, he went to Holland and thence to Deal, England, where he died in poverty and among strangers. Fifty three years after his death congress re-examined his accounts, found that the govt. was in his debt to a large sum, and appropriated the amount to his heirs.

DEAN FOR'EST: picturesque hilly tract, 22,000 acres, in the west of Gloucestershire, between the Severn and the Wye. It is mostly crown-property, and about half is inclosed for the growth of timber for the navy. It contains oak, beech, etc., woods; orchards, yielding the famous Styre apple-cider; coal and iron mines; and stone-quarries for building, grinding, and making troughs and rollers. It is divided into six walks. The population is chiefly miners, formerly a lawless set. The former inhabitants had many ancient privileges—acquired by birth, and by working a year and a day in the Forest—viz., exemption from rates and taxes, free pasturage, right of mining—a sixth of the produce being due to the sovereign—and access to the woods for timber for their works. D. F. is governed by a lord-warden, six deputy-wardens, and other officials.

DEAR, a. *dēr* [AS. *deor*, dear: Gael. *daor*, bound, precious, dear in price: Dut. *duur;* Sw. *dyr;* Icel. *dyrr*, dear, precious]: high-priced; more costly than usual, as arising from scarcity; highly esteemed; beloved; precious: N. a darling; a word of endearment or affection. DEAR'LY, ad. *-li*. DEAR'NESS, n. the state or condition of being dear or high priced. DEAR-BOUGHT, purchased at too high a price. DEAR'Y, n. *-i*, a familiar term for *a dear*. DEARLING, n. *dēr'ling*, in *OE.*, a darling. OH, DEAR ME [said to be a corruption of L. *oh, Deus mi*, oh, my God]: an exclamation of surprise or displeasure.

DEAR, a. *dēr* [Gael. *dur*, hard, unbending: OE. *dere*, dire, sad: Scot. *dour*, hard, cruel: F. *dur*, hard]: in *OE.*, hard; dire; stern; unyielding. DEAREST FOE, most hateful or most unyielding foe. DEARBORN, n. *dēr'bawrn* [from the name of the inventor]: a light four-wheeled family carriage of moderate pretensions.

DEARBORN, *dēr'born*, HENRY: 1751, Feb. 23—1829, June 6; b. North Hampton, N. H.; military officer. He studied medicine and practiced till the battle of Lexington, when he hurriedly enlisted a company of minute men and marched with them to Cambridge. Appointed a capt. in Stark's regt. he covered the retreat of the Americans at Bunker Hill; then went with Gen. Arnold to Canada, took part in the attack on Quebec and was made prisoner 1775, Dec. 31.; paroled 1776, May, he was exchanged 1777, Mar., appointed maj. in Scammell's regt., and took a conspicuous part in the battles of Saratoga and Monmouth, beside minor engagements. In 1781 he became col. and deputy quartermaster gen. on Washington's staff, served through the Yorktown campaign, and at the close of the

war settled in Monmouth, Me. He was commissioned brig. gen. of militia 1787 and maj.gen. 1795; was U. S. marshal for Me. 1789; member of congress as a democrat 1793-97; sec. of war 1801-9; collector of the port of Boston 1809-1812, Jan. 27, when he was appointed senior maj.gen.. U. S. A.; captured Toronto 1813, Apr. 27, and Fort George May 27; and was U. S. minister to Portugal 1822, May 7—1824, June 30. Fort Dearborn, the first building erected on the site of Chicago (1804), was named in honor of Gen. D., then sec. of war.

DEARN, or DERN, a. *dern* [Gael. *deur*, a tear; *deurach*, tearful, melancholy, sad: AS. *dyrnan*, to hide, to secrete; *dearn*, secret]: in *OE.*, secret; sad; lonely; melancholy. DEARN'LY, ad. *-li*, secretly; sadly: see DERN.

DEARTH, n. *dĕrth* [from *dear*, as *length* from *long*]: scarcity; want; famine; barrenness or want of.

DEATH, n. *dĕth* [Goth. *dauthus;* Icel. *dauthi*, death: Low Ger. *dode*, a dead body: Icel. *deya*, to die]: a total and permanent cessation of all the vital functions; cause of death; state of the dead; decease; mortality; alienation or separation of the soul from God; state of being under the dominion of sin. DEATH'LESS, a. immortal. DEATH-LIKE, resembling death; very still. DEATH-BED, the bed on which a person dies; the closing hours of life on a bed. DEATH-BLOW, a disappointment or misfortune so great as to prove injurious, and even fatal, to the bodily frame and mind. DEATH'S DOOR, a near approach to death. DEATH-RATTLE, a rattle in the throat of a dying person. DEATHS-MAN, in *OE.*, the hangman; the public executioner. DEATH-STROKE, the stroke of death. DEATH-TOKEN, that which is supposed to indicate approaching death. DEATH-WARRANT, an order signed by the sovereign for the execution of a criminal.—SYN. of 'death': departure; demise; extinction; murder.

DEATH: decease; dissolution of the vital bond. It is one of the fundamental doctrines of physiology that every part of the organism has its own definite term of vitality, and that there is a continuous succession of the destruction of old cells and the formation of new ones in all tissues, and especially in those in which the most active vital changes are going on, as, for example, in the nervous and muscular tissues. Even the most solid portions of the animal frame, such as the bones and (to a less extent) the teeth, are undergoing a perpetual although slower change of this nature; and throughout the body there is a continuous removal of effete or worn-out tissues, and a corresponding deposition of new matter. Every blow we strike, every thought we think, is accompanied by the death and disintegration of a certain amount of muscular or nervous tissue as its necessary condition; and thus every action of our corporeal life, from its beginning to its close, takes place at the expense of the vitality of a certain amount of organized structure. This is termed *molecular D.*, and, within its proper limits, is obviously essential to the life and well-being of the organism.

The cessation of the circulation and respiration may be

regarded as constituting *somatic D.*, or the D. of the entire organism, which must obviously be shortly followed by the molecular D. of every portion of the body.

We shall now briefly notice the principal modes in which D. occurs. D. happens either from the natural decay of the organism, as in old age, or (and much more frequently) from some of those derangements or lesions of the vital organs which occur in the course of diseases and injuries. These derangements of the vital organs may occasion various modes of dying. Dr. Watson remarks, in his *Lectures on the Principles and Practice of Physic*, that life rests on a tripod, whose three vital supports are the *heart*, the *brain*, and the *lungs*. Through the impaired functions of one or more of these organs, the tendency to D. is expressed. This is much the same as Bichat's statement that 'the mode of dying may begin at the head, the heart, or the lungs.' The functions of these organs are, however, so mutually dependent upon each other that impairment in the functions of one of them may lead to D., while the mode of dying is expressed chiefly through the functions of another.

When a person loses blood to such an extent that he faints, if the flow of blood be not arrested the state of fainting or *syncope* continues, and the heart's action ceases. The cause of D. here is, not that the heart is unable to contract, but because its natural stimulus, the blood, does not enter it in sufficient quantity to excite contraction. This is termed D. by *anæmia*. In other cases, the stimulus from blood may be sufficient, but the heart may have lost its contractile power. Such a mode of death is said to be by *asthenia* [Gr. want of power]. Many poisons and diseases, due to morbid materials in the blood (as, for example, cholera), prove fatal in this way.

D. may be produced likewise by suspension of the functions of respiration, as when access of the air to the lungs is impeded, or when the actions of the muscles of respiration cease, in consequence of disease or injury of the brain or spinal cord. The first of these modes is known as suffocation or *apnœa*, and we have examples of it in drowning, smothering, choking, strangulation, etc. Forcible pressure upon the chest, such as sometimes happens in great crowds, or as occurs to workmen partially buried by the fall of earth, etc., will cause D. in a few minutes, if movement of the lungs is prevented by the pressure. Tetanus and the poison of strychnine prove fatal in this way.

D. by coma, or beginning at the brain, is caused by obstruction to the circulation through that organ by pressure (as, for example, when there is effused blood within the cranium, or when a portion of bone is depressed in a fractured skull); by clots of blood within the vessels; by various narcotic poisons, such as opium, alcohol in excessive quantity, carbonic acid, etc.

To these forms of dying may be added (according to Dr. C. J. B. Williams) *necræmia*, or D. beginning in the blood, such as occurs in typhoid fevers and in other diseases malignant or pestilential. In this case, there is complete and general prostration of all the living powers. The blood, the

natural source of life to the whole body, is itself dead, and spreads death instead of life. Almost simultaneously, the heart loses its power; the vessels, and especially the capillaries, lose their tone, and congestion takes place in various organs, the medulla oblongata, from which the chief respiratory nerves arise, is torpid; the powers of respiration fail; voluntary motion is almost suspended; molecular nutrition ceases, and is very rapidly followed by general molecular D.; that is to say, structures and even organs die, and begin to undergo decomposition as soon as the pulse and breath have ceased; and indeed, a partial change of this kind may even precede somatic D., as, for example, when parts become gangrenous, etc.

As to the signs of approaching D.; the mind may be affected in various ways; there may be dulness of the senses, vacancy of the intellect, and extinction of the sentiments, as in natural D. from old age; or there may be a peculiar delirium, closely resembling dreaming, usually pleasing and cheerful:

> Saw ye not even now a blessed troop
> Invite me to a banquet, whose bright faces
> Cast thousand beams upon me like the sun?
> *King Henry VIII.*, Act iv. Scene 2.

In dreadful contrast with such visions are those which haunt the dying moments of other, when it sometimes almost seems that retribution of evil deeds began even on the bed of death.

Dementia or imbecility sometimes comes on shortly before D., and manifests itself by an incapacity of concentrating the ideas upon any one subject, and by almost total failure of memory. The mental weakness is often indicated by the pleasure derived from puerile amusements. Shakespeare notices 'playing with flowers' as a token of approaching dissolution. In the form of delirium, ocular spectra often seem present, the patient apparently trying to catch some imaginary object.

There is generally well marked relaxation and incapacity of the muscular system, and the voice is usually weak and low as D. approaches, often dwindling to a mere whisper. The mode in which the action of the heart declines is various; in most diseases of long standing, the cessation of the heart's action is gradual, the rate of the pulsations being much increased, but their energy much impaired. In some acute affections, the failure is shown by the irregularity of the pulse, while the force is little altered. In other cases (especially in cerebral diseases), the heart, before finally ceasing to beat, contracts violently, and suddenly stops.

The respiration is sometimes hurried and panting till just before D., while in other cases it is slow, laborious, and stertorous. The accumulation of mucus, etc., in the air-passages increases the difficulty of breathing; the sound known as the 'death-rattle' being produced by the passage of the air from the lungs through the fluid collected in the trachea and upper respiratory passages.

There is a loss of animal heat, beginning at the extremities. See, further, DEATH, in *The Cyclopædia of Anatomy and Physiology*, from which some of the matter preceding is taken.

The *signs of actual D.* may be arranged under three heads: 1. Signs of the extinction of the vital functions; 2. Changes in the tissues; 3. Changes in the external appearance of the body.

1. The arrest of the circulation and respiration would at first sight appear to afford decisive evidence of D.; but these functions, as in the case of hibernating animals, may be reduced to so low a condition that it is by no means easy to decide whether or not they are completely annihilated. In cases of apparent drowning, these functions are frequently suspended and again restored; and cases like that of Col. Townsend (see any standard work on medical jurisprudence) occasionally occur, in which the patient has the power of voluntarily suspending these functions for a considerable period.

The loss of irritability in the muscular fibres (a fact readily ascertained by a galvanic current) is a sign of far greater importance than either the apparent stoppage of the circulation or of the respiration. The contractility of the skin is also lost after death. When a cut is made through the skin of a dead body, the edges of the wound collapse, while a similar lesion inflicted during life presents an open or gaping appearance.

2. Among the changes in the tissues, the *rigor mortis*, or rigidity of the muscles, which ensues at a varying period after D., is the most important. It may appear within half an hour after D., or may be delayed 20 or 30 hours, according to the nature of the disease; and its mean duration is 24 to 36 hours. It commences in the neck and trunk, then appears in the lower, and lastly in the upper, extremities, and disappears in the same order.

3. Various changes in the external appearance of the body have been regarded as indicative of D. by different writers; of these, the most important unquestionably is the altered color of the surface. Livid spots of various sizes may occur from local congestions during life; but the appearance of a green tint on the skin of the abdomen, accompanied by a separation of the epidermis, is a certain sign that life is extinct.

The discrimination of true from apparent D. is obviously not a matter of mere physiological interest. The case of Vesalius, the eminent anatomist, who opened a supposed and apparently dead body in which the exposed heart was seen still beating, is well known; as also that of the Abbé Prevost, who, having been struck down by apoplexy, was regarded as dead, but recovered consciousness under the scalpel, and died immediately afterward; and a French author of the last century, Bruhier, in a work *On the Danger of Premature Interment*, collected 54 cases of persons buried alive, 4 of persons dissected while still living, 53 of persons who recovered without assistance after they were laid in their coffins, and 72 falsely considered dead.

DEATH, Punishment of: see Capital Punishment.

DEATH-BED. Law of, in Scotland: presumption, formerly maintained in law, that any man who, while suffering from the disease of which he ultimately died, burdened or conveyed away his heritable estate, to the prejudice of his lawful heir, must have so acted in consequence of his inability to resist importunity in the state of feebleness to which he was reduced; for which reason his heir was entitled to reduce the deed. This rule belonged to the most ancient consuetudinary law of Scotland. It has been abolished by laws of recent date.

DEATHS, Registration of: see Registration.

DEATH'S HEAD MOTH (*Acherontia atropos*): species of Hawk-moth (q.v.), or lepidopterous insect of the family *Sphingidæ*, widely distributed over the world, being found in Europe, Africa, the Mauritius, and the E. Indies. It measures almost five inches from tip to tip of the extended wings; is of dark color, the body yellow with black markings, the thorax with pale markings which have some resemblance to a skull, and from which it derives its name; the upper wings mottled with brown, black, and yellow. The caterpillar is greenish-yellow, the back speckled with black, with transverse lines partly blue and partly white;

Death's Head Moth and Caterpillar.

and in countries where the potato is cultivated is often found feeding on the leaves of that plant. This insect is most frequently seen flying about in autumn, and only in the mornings and evenings. It is remarkable for emitting a plaintive squeaking sound, which, with its dark color, and the skull-like mark on the thorax, has led to its being regarded with superstitious dislike, the sudden appearance of large numbers being popularly held ominous of evil; while, in the Mauritius, a notion prevails that it casts a dust from its wings which produces blindness in persons on whom it falls, and its entering an

apartment is therefore regarded with dread. How the noise which it emits is produced is not known. If the insect is taken and confined in the hand, this sound is sent forth sharply and strongly. The D. H. M. is interesting on still another account, as one of those insects which enter and plunder bee-hives, feeding upon the honey; and though apparently quite defenseless, it ravages with perfect impunity the stores of creatures so well provided with formidable weapons, and generally so ready to use them against an intruder. No explanation of this fact is known.

DEATH'-WATCH: ticking sound produced by certain insects, inmates of human dwellings; also the insect producing it. The sound, easily heard in that stillness which attends sickness and anxiety, has become associated with superstitious notions, being regarded as indicative of an approaching death. The most common form of this prevalent superstition is the belief that when the D. is heard some member of the household will die within a year. The tickings of the D. were formerly attributed to species of woodlouse and of spider, and it is probable that they are not all produced by insects of the same kind; but the most common D. of Britain is a species of Borer (q.v.) (*Anobium tesselatum*). It is of dusky or grayish-brown color, about a quarter of an inch in length. It is generally in summer that its noise is heard, the number of raps given in quick succession, varying from several to more than a hundred. These are repeated at uncertain intervals. The noise exactly resembles that made by beating with the nail upon a table; and when this is done, the insect is frequently in-

A B C

Death-watch, magnified:
A, Anobium tesselatum; B, Anobium pertinax; C, Anobium striatum.

duced to reply to it. It is the perfect insect, not the larva, which produces this sound. It seems, indeed, to be a call by which the sexes are attracted to each other, and is produced by the insects beating upon some hard substance with its head, in doing which, it raises itself upon its hind-legs, and with the body somewhat inclined, beats its head with great force and agility against the substance on which it stands. One of them was seen by Mr. Stackhouse thus to beat upon a sedge-bottomed chair with such force that its strokes made little indentations in the outer coat of the sedge.

DEAVE, v. *dēv* [Scot.: Norw. *dyvja*, to buzz, to sound hollow (see DEAF)]: to stupefy with noise. DEAV'ING, imp. DEAVED, pp. *dēvd*.

DEBACLE, n. *dĕ-băk'l* [F., breaking of a frozen river] in *geol.*, any sudden flood or rush of water which breaks down opposing barriers, and hurls forward and disperses blocks of stone and other debris.

DEBAR, v. *dĕ-bâr'* [*de*, from, and *bar*]: to cut off; to exclude; to hinder from approach, enjoyment, etc. DE BAR'RING, imp. DEBARRED', pp. *-bârd'*.—SYN. of 'debar': to deprive; hinder; prohibit; disqualify; exclude; preclude; forbid; refuse.

DEBARK, v. *dĕ-bârk'* [F. *débarquer*, to land—from *dès*, from, and *barque*, a boat or vessel]: to disembark; to land from a ship or boat. DEBARK'ING, imp. DEBARKED', pp *-bârkt'*. DEBARKATION, n. *dē'bâr-kā'shŭn*, the act of landing from a ship.

DEBASE, v. *dĕ-bās'* [*de*, down, and *base*, low, which see]: to reduce from a higher to a lower state; to reduce or lower in quality, purity, or value; to adulterate; to degrade; DEBA'SING, imp. DEBASED', pp. *-bāsd'*. DEBA'SER, n. *-sĕr*, one who. DEBASE'MENT, n. the act of debasing; the state of being debased. DEBA'SINGLY, ad. *-lĭ*.—SYN. of 'debase': to abase; humble, disgrace; humiliate; dishonor; lower.

DEBA'TABLE LAND: tract on the w. border of England and Scotland, chiefly level and moory, now in course of improvement. This tract of country, between the Esk and Sark, was so named because at one time claimed by both kingdoms. In 1542, it was divided by royal commissioners, appointed by the two crowns, who separated it by a line drawn from e. to w. between the two rivers. The upper half was adjudged to Scotland, and the more eastern part to England. Yet it continued long afterward the residence of the thieves and banditti to whom its dubious state had afforded a refuge. The Graemes, a troublesome clan of freebooters who inhabited the D. L., were transported to Ireland at the beginning of the 17th c., and prohibited from returning on pain of death. See BORDER.

DEBATE, n. *dĕ-bāt'* [F. *débat*, strife; *débattre*, to contend, to fight a thing out—from *de*, *battre*, to beat]: contention in words; discussion between two or more persons avowedly for the discovery of truth: V. to contend for in words or arguments; to dispute; to deliberate. DEBA'TING, imp. DEBA'TED, pp. DEBA'TER, n. one who. DEBA'TABLE, a. *-bā'tă-bl*, subject to dispute; that can be controverted. DEBA'TINGLY, ad. *-lĭ*. DEBATING SOCIETY, an association, generally of young men, for discussing general and special subjects, to improve themselves in extemporaneous speaking. DEBATE'MENT, n. in *OE.*, controversy; formal consideration.—SYN. of 'debate, v.': to argue; dispute; discuss; contend; contest; struggle.

DEBATE': discussion, or contention in words, differing from conversation in this, that the speakers succeed one another according to certain regulations, and that the subject is treated formally, and in general with a view to coming to some practical conclusion. The term has a general

meaning, but is specially applied to the discussions of political representative bodies. Parliamentary and congressional debates are sometimes decried as useless, and even mischievous. How, it is said, can a couple of speeches, *pro* and *con*, produce a rational conviction on any subject? It is more likely that the judgment will be run away with by specious oratory. But this proceeds upon a false conception of the great object of public D., which, though it may seldom influence the votes on the actual question, serves to justify the proceedings of public men to their constituents, and by its varied presentation of a case, forms one of the chief ailments of public opinion and of the political life of a community.

DEBAUCH, n. *dĕ-bawch'* [F. *débauche*, a cessation of work, idleness, debauch; *débaucher;* OF. *desbaucher*, to mar, to corrupt—from *dès*, from; *bauche*, a row or course of bricks in a building: Icel. *balkr*, a heap, a beam: comp. Gael. *baois*, lewdness]: excess in eating or drinking; intemperance: lewdness: V. to corrupt; to vitiate. DEBAUCH'ING, imp. DEBAUCHED', pp. *-bawcht':* ADJ. dissipated and sensual in appearance; corrupted; vitiated. DEBAUCH'EDLY, ad. *-lĭ.* DEBAUCH'EDNESS, n. DEBAUCH'ER, n. *-ėr*, one who debauches or corrupts others. DEBAUCH'ERY, n. *-ėr-ĭ*, gluttony; excess; sensuality. DEBAUCHEE, n. *dĕb'ō-shē'*, a man given to intemperance or lewdness. DEBAUCH'MENT, n. the act of debauching or corrupting; the act of seducing.

DE BAY, MICHAEL: see BAJUS.

DEBEL, v. *dĕ-bĕl'* [OF. *débeller*, to conquer—from L. *debellārĕ*—from *de*, down; *bellum*, war]: in *OE.*, to conquer; to expel by war. DEBEL'LING, imp. DEBELLED', pp. *-bĕld*.

DE BENE ESSE, *dē bē'nē ĕs'sē* [L.]: at or for its present value; for what it is worth.

DEBENTURE, n. *dĕ-bĕn'tūr* [L. *debentur*, there are owing—from *debĕō*, I owe; OF. *debentur*, a quittance or receipt]: written or printed acknowledgment of a debt or borrowed money, on which a certain amount of interest is agreed to be paid yearly or half yearly, as a *railway debenture:* also a governmental certificate of drawback on goods exported, given according to law, promising to repay at a time specified, a certain sum to an importer, provided the duties chargeable in the case shall have been discharged before he time specified. DEBEN'TURED, a. *-tūrd*, pertaining to goods on which a certificate of drawback has been granted. —A Railway Debenture is a deed of mortgage given by a railway company for borrowed money: see CAPITAL ACCOUNT: RAILWAYS, (Legislation and Management). The deed by which the loan is effected is simple in appearance and nature. All expenses connected with it, brokerage included, are borne by the company. It mortgages, in consideration of a specified sum of money paid to the company, the company's estate, right, title, and interest to the lender, and engages to pay a specified interest on the sum till the

repayment of the principal. But it stipulates that by mutual agreement, at that specified time. the loan may remain on interest at such rate and for such longer time as may be agreed on. It is signed by the proper officials of the company, with witnesses. With it are given warrants or coupons for the payment of interest at the periods specified, which are paid on presentation.

Brief, simple and effective, a railway D., with its accompanying interest-warrants, is perhaps the most convenient deed of mortgage ever invented. In few and unequivocal words, it pledges the whole railway for the loan, and it must necessarily be redeemed before any shareholder can claim a dividend from the undertaking—each D. being numbered in its order, and ranking according to its number. Railway debentures are, therefore, reckoned a safe form of investment, and are eagerly taken up by individuals who have sums of a few hundred, or thousand dollars to lend for several years at a stipulated rate of interest. These debentures possess the further advantage of being saleable, and through the agency of stockbrokers they pass from hand to hand. In the event of neither interest nor principal being paid, the holder is entitled to enforce the mortgage. Similar debentures are issued by various public trusts under statutory authority, and by joint-stock companies, in virtue of contracts pledging the credit of the undertaking: see Bond (of Corporations).

DEBILE, a. *dĕb′il* [L. *debĭlis*, weak]: in *OE.*, weak feeble.

DEBILITATE, v. *dĕ-bĭl′ĭ-tāt* [L. *debĭlĭtātus*, lamed weakened: F. *débiliter*, to enfeeble—from L. *debĭlis*, weak] to enfeeble; to weaken; to impair the strength of. Debil′itating, imp. Debil′itated, pp.: Adj. weakened. Debil′ita′tion, n. *-tā′shŭn* [F.—L.]: a weakening relaxr; tion. Debil′ity, n. *-tĭ* [F. *débilité*]: weakness; languoa-feebleness.—Syn. of 'debility': faintness; infirmity; imbecility; enervation.

DEBIT, n. *dĕb′it* [F. *débit*, a debt—from L *debĭtum*, that which is owing, a debt—from *debĕō*, I owe: It. *debito*]: an entry on the debtor (Dr.) side of an account. V. to charge with debt; to enter on the debtor (Dr.) side of an account. Deb′iting, imp. Deb′ited, pp.

DÉBLAI, n. *dĕ-blā′* [F., act of taking away or clearing] in *fortification*, any hollow space or excavation in the ground made during the construction of fortifications or siege-works. The cavity itself is the D., while the earth taken from it, also sometimes called the D., is properly termed the *remblai*.

DEBONAIR, a. *dĕb′ŏ nār′* [OF. *debonere* and *debonaire*, affable: It. *bonario*, upright, honest: F. *débonnaire*, courteous, affable—from *de bon air*, of good air or mien]: good-humored; gentle; complaisant; elegant; well-bred. Deb′onair′ness, n good-humor; gentleness. Deb′onair′ly, ad. *-lĭ*, elegantly.

DEBORAH. *dĕb′o-ra* [Heb., a bee]: Hebrew prophetess,

wife of Lapidoth, in the time of the Judges. She dwelt in Mount Ephraim, and uttered her judicial oracles from her tent under the palm-tree between Bethel and Ramah. To deliver her land from the oppressive yoke of the Canaanites, under which it had groaned for 20 years, D called to her aid Barak, son of Abinoam, probably a man of heroic temper. An army was raised among the tribes of Naphtali and Zebulon, and a battle took place in the plain of Esdraëlon, where the Canaanitish host was completely routed, and Sisera during his flight, as D. had predicted, was murdered by a woman. This victory secured to the Israelites a peace of 40 years. The 'Song of Deborah' (as it is generally called, though its composition is not ascribed to her in the Book of Judges) is a choice fragment of primitive Hebrew poetry.

DEBOUCH, v. *dā-bôsh'* [F. *déboucher*, to open, to escape —from *de* for L. *dis*, out, away, and *bouche*, mouth—from L. *bucca*, the cheek]: to march out of a narrow place, a wood, or a defile, as troops. DEBOUCH'ING. imp. DEBOUCHED', pp. *bôsht'*. DEBOUCHMENT, n. *dā-bôsh'mĕnt*, the marching out of troops from a narrow defile, etc. DEBOUCHURE, n. *dā-bô-shôr'*, the opening or mouth of a river or strait.

DE BOW, *de bō*, JAMES DUNWOODY BROWNSON: 1820, July 10—1867, Feb. 27; b. Charleston: statistician. He graduated at Charleston College 1843, and was admitted to the bar and became editor of the *Southern Quarterly Review* 1844. In the following year he founded *D. B.'s Commercial Review* in New Orleans; 1848 was appointed prof. of political economy and commercial statistics in the Univ. of La.; 1850–53 had charge of the census bureau of La.; 1853–56 was supt. of the U. S. census; and after the civil war conducted his *Review* first in New York, then in Nashville. He was one of the founders of the La. Hist. Soc.; contributed a number of articles on American topics to the *Encyclopædia Britannica* (8th ed.); was a member of the successive southern commercial conventions from 1845, and pres. of that at Knoxville 1857; and was author of *Encyclopædia of the Trade and Commerce of the United States*, 2 vols. (1853), *The Industrial Resources and Statistics of the Southwest*, 3 vols. (1853), *Statistical View of the United States*, based on the census of 1850 (1854), and *The Southern States: Their Agriculture, Commerce, etc.* (1856). He was also a popular lecturer on social and economic subjects.

DEBRECZIN, *dā'brĕt'sin:* large straggling town of c. Hungary, in an extensive plain, about 120 m. e. of Pesth. Like many Hungarian towns, D. is a mere collection of villages, united on no particular plan. The houses mostly are mean structures, not more than one story in height, and the streets unpaved, and exceedingly dirty; in certain seasons of the year, planks are laid down to enable passengers to cross. Notwithstanding its generally squalid character, however, D. has some very handsome public buildings, including a town-hall, a Protestant college, with a staff of 24 professors and 2,000 students, and several churches,

monasteries, and charitable institutions. A bronze statue to the popular poet, Csokonaij, was erected 1871, and there is also a monument, consisting of a dying lion on a pedestal of rock, to the Honvéds, who fell at the battle of D. 1849. The inhabitants, who are very industrious, are dependent chiefly on agriculture, but a number are engaged in the manufacture of coarse woolens, sheep-skins, leather, earthenware, soap, saltpetre, and tobacco-pipes, which are famous throughout Hungary. The cattle and swine markets of D. are among the most extensive in Europe; its grain market is also large. D. was prominent in the revolution of 1849, and was for some months in that year the seat of the national diet, after it had been forced to remove from Pesth. Its inhabitants, with the exception of 2,000, are Protestants. They have suffered much on account of their faith, especially in 1567 and 1686. Pop. (1900) 75,006.

DEBRIS, n. *dā-brē'* [F. *débris*, rubbish—from *de*, and *bris*, wreck]: rubbish; ruins; fragments of rock, etc.

Debruised.

DEBRUISED, *dē-brōzd'*: term peculiar to English heraldry, used to indicate the grievous restraint of an animal, and its being debarred of its natural freedom by having any of the ordinaries laid over it (*Dictionary of Display*).

DEBRY, *dĕh-brē'*, Jean Antoine Joseph: 1760–1834; b. Vervins, France; statesman. He was educated for the law, but entered public life as a moderate republican 1790, and was sent to the assembly the following year. In 1793 he was appointed a member of the committee of public safety, and 1796 of the Council of Five Hundred; 1798 was sent as minister plenipotentiary to Rastadt; and 1799 narrowly escaped assassination by Austrian troops on returning from his mission. He was appointed prefect of Doubs 1801 and held the office till 1814. In the leisure of his public duties he practiced his profession with signal ability.

DEBS, *dĕbz*, Eugene V.: labor agitator: 1855 — ———; b. Terre Haute, Ind. He attended public schools, and then took employment as a railroad fireman. At the age of 26 he was a member of the legislature. He was grand sec. and treas. of Locomotive Firemen for 14 years. Through his influence the United Order of Railway Employees was organized, and he led in establishing the American Railway Union, in Chicago (1893), which won a strike against the Great Northern railway. In 1894, the workmen of the Pullman Palace-car Co. struck for higher wages and were supported by the Am. Railway Union, under D.'s leadership, and a boycott of all Pullman cars was ordered, ending in the memorable general railroad strike. To protect the mail and commercial services Pres. Cleveland ordered federal troops to the scenes of disturbance, and D. and his confederates were indicted for conspiracy, but the jury disagreed. Later they were sent to jail for six mos., by order of the U. S. circuit court sustained by the supreme court.

DEBT.

DEBT, n. *dĕt* [OF. *dette* and *debte*—from mid. L. *debĭtă*, a sum due; *debĭtus*, owed (see DEBIT)]: anything due from one person to another; what one is bound or obliged to pay; obligation; liability; in *Scrip.*, sin; trespass. DEBT OF NATURE, death or dissolution, as what is due to universal and inexorable law. DEBTOR. n. *dĕt'ér* [OF. *deteur*—from L. *debĭtōrem*, a debtor]: the person that owes another money, goods or services; the side of an account in which debts are marked. DEBTED, pp. v. *dĕt'ĕd*, OE. for indebted.

DEBT: that which one person owes to another, or the duty which, as responsible beings, all owe toward God. Life is figuratively spoken of as a loan, and the act of dying is called 'paying the debt of Nature.' Usually, the term is limited to money legally due, and exigible by process of law. To speak in legal phraseology, debt may originate either in agreement or by operation of law, or as a consequence of injury, though in the latter case it generally assumes the form of a claim for Damages (q.v.). Liquidated debt (in Scotland, liquid), is where the exact amount has been ascertained; contingent debt, is where the liability depends on the occurrence of an event which may or may not happen; future debt is where the liability is existing, but the time for payment has not yet arrived. This may, under some legal systems, like the Scotch, be secured by Arrestment or Inhibition where the debtor's solvency is doubtful; but under other systems there is, in general, no method of affixing a liability upon property in expectation of insolvency before the debt becomes payable, except in the case of bankruptcy, when a future or contingent debt may be proved against the estate. A debt may be secured on the debtor's real estate, as by mortgage or equitable lien; but these mortgages are regarded as personal estate. A debt of record is one proved to exist by the records of a court. The most important are judgment debts, which have not only certain facilities in execution and attachment, but must be paid in full out of the personal estate before any debts due on contract. Specialty debts are debts by contract created by a deed or an instrument under seal. Other classifications of debt are: *doubtful*, whose payment is uncertain; *hypothecate*, constituting a lien on an estate; *active*, due to an individ-

ual; *liquid*, due immediately without conditions; *privileged*, entitled to payment before others in case of the debtor's insolvency; e.g., debts to the govt., or for funeral expenses. It is necessary to a legal debt that a specific amount be due without reference to any future valuation to settle it.

DEBT, ACTION OF: procedure in law to recover what is owed; also to collect a penalty imposed by a statute; now technically existing in but few states, as recent laws provide a single civil action. A debt may be established by a document of record, a contract under seal, or a simple contract. An essential consideration is that a fixed and specific sum is owing and that no future valuation is required to settle it. In practice an action of debt is taken when the sum due is certain or is ascertained in such a manner as to be readily reduced to certainty, irrespective of how the obligation was incurred or is substantiated. It differs from *assumpsit* where action is taken on a certain or an uncertain sum, and from *covenant*, where it is taken only upon contracts substantiated according to prescribed rules. When the action is founded on a record, the declaration need not aver a consideration; when on a specialty, the declaration must contain the specialty; and when on a single contract, the consideration must be averred in the declaration, and the liability or agreement, though not necessarily an express promise to pay, must be stated. In pleading a defendant may deny the execution of the instrument or the existence of the record on which the action is taken; and a judgment may constitute a new debt on which another action of debt may be taken.

DEBT, IMPRISONMENT FOR: an ancient legal procedure which, except in certain specified cases, was abolished in England 1869, in Scotland 1880, and has been gradually removed from the laws in the United States. In England the most important cases in which it is retained are those of defaulting trustees, of judgment debtors able but refusing to pay, and of absconding debtors. In the United States the law, as to the few special cases in which imprisonment for debt is allowed, differs in different states: usually in all such cases there is involved the element of fraud, or of violation of some official trust.

DEBT, NATIONAL: amount which any state admits itself to owe to those who may have advanced money for the use of the government, and on its credit or promise to pay. As in the case of individual debtors who sometimes engage to pay more than they obtain from the lender, the amount of a national debt may not be the amount which the nation has borrowed; it is often greater, from the necessity of holding out to capitalists, as an inducement to make a large advance, that they will be set down as creditors for more than they have given. On the other hand, though rarely on a large scale, when money is bearing low interest, a nation may give its creditors the alternative of receiving payment, or allowing a deduction from the nominal amount of their debt, and they may prefer the latter alternative.

The national debt of Great Britain until the Franco-German war was the largest, but the debt of France has since held that distinction.

The debt of Great Britain arose with the supremacy of parliament and the necessity of a standing army. The first regular loan was in 1693 $6,000,000 the capital of the newly founded Bank of England (q.v.). At the accession of George I. 1714, it amounted to $180,000,000, and at the close of the Napoleonic wars, 1815, $4,184,649,996.

The French debt in 1800 was $137,802,000 and in 1815 in spite of fifteen years of war it was only $245,496,000. The debt was more than doubled during the reign of Napoleon III., and in 1870 was $2,403,622,000. The disastrous defeat by Germany in 1871 which imposed a war indemnity of $965,000,000 on France, and the expense of her great standing army are the chief causes of the great rise in the French debt. For the debt of the U. S.: see UNITED STATES, DEBT OF.

The following table shows the public debts of the leading nations of the world at the end of the 19th c.:

COUNTRIES.	DEBT.	
	Total.	Per Capita.
GOLD STANDARD.	*Dollars*	*Dollars*
Austria-Hungary	2,821,706,000	68.22
Belgium	506,853,000	76.95
British Africa	185,189,000	37.55
British Australia	1,110,465,000	231.64
British Honduras	169,000	4.97
British North America	72,017,000	14.49
British West Indies	20,459,000	13.63
Bulgaria	50,612,000	15.28
Costa Rica	11,125,000	37.71
Cuba	341,726,000	209.39
Denmark	56,287,000	25.76
Dutch East Indies		
Egypt	481,359,000	49.45
France	5,829,742,000	151.12
Germany	2,573,585,000	60.00
Great Britain	3,090,427,000	76.89
Hawaii	4,489,000	41.18
India and Ceylon	1,200,448,000	4.13
Japan	201,110,000	4.71
Netherlands	470,528,000	94.03
Peru	23,798,000	9.08
Rumania	249,305,000	42.98
Russia	3,837,156,000	35.29
Servia	72,075,000	31.13
South African Republic	13,278,000	12.12
Sweden and Norway	125,688,000	17.92
Switzerland	16,428,000	5.33
Uruguay	128,850,000	155.62
United States	2,104,875,000	28.06

DEBTOR AND CREDITOR, LAWS OF: a department of jurisprudence. In the history of this, as of almost every other branch of jurisprudence, we may trace the general social progress. In the earlier stages of life in the state, the arrangements for borrowing and lending are rarely such as to enable the citizens to avail themselves with security of

their mutual resources, or to assign such limits to the powers of the creditor as either the claims of humanity or his own true interests demand. On the one hand, lending is confounded with alms-giving; and the exaction of interest, and even of capital, is regarded as an act of inhumanity toward the poor. On the other hand, no sooner do the creditor's rights come to be recognized in anything like a legal sense, than there seem to be no logical grounds on which any limits can be set to them. If he is entitled to exact the debt at all, he is entitled to seize the goods of the debtor; and if the debtor has no goods, he is entitled to his services. But the possession of his services implies the possession of his person; and the possession of his person implies the possession of his life. Moreover, from the exaggerated notions of the domestic ties which usually prevail in early times, the person of the individual, where that individual is the father of a family, brings with it that of his wife, his children, and his slaves. The creditor thus becomes the absolute master of the life and liberty of his debtor, and of all those dependent upon him. The arrangements of the Mosaic Law are an illustration of the manner in which, in the ruder forms of society, the laws of debt thus combine a degree of lenity with a degree of severity which equally are alien to modern views. In this as in many other respects, they are, as Michaelis has pointed out (II. 300), a recognition of the consuetudinary law of the stage of society to which they belonged; though they seem also modified in accordance with the peculiar position of the Jewish nation as the chosen people, the special household of God, than a system special to the Jews. If an Israelite became poor and in want, it was a duty to lend to him, and no interest was to be exacted either in money or in produce: he was a poor brother in the family. With a foreigner, the case was different, and the taking of interest was legal (Exod. xxii. 25; Deut. xxiii. 19, 20; Lev. xxv. 35–38). When the Sabbatical year arrived—i.e., at the end of every seven years—there was a general remission of debts as between Israelite and Israelite; and the near approach of the year of remission was not to be recognized as an apology for declining to lend to an indigent brother (Deut. xv. 1–11). Pledges, it is true, might be taken, but even here the same humane principles prevailed. The upper millstone was sacred, for to take it would be to deprive the debtor of the means of subsistence. If raiment was the pledge, it must be returned before nightfall, when it might be required for a covering; and the widow's garment could not be taken in pledge (Exod. xxii. 26, 27). In strange contrast to this is the provision (Lev. xxv. 39) that a poor Israelite may be sold to an Israelite possessed of substance, even when modified by the special provision that he shall serve as a hired servant, not as a bond-servant, and shall be set at liberty when the year of jubilee arrived. Michaelis says that the judicial procedure for debt was quite summary, the most important causes being decided probably in a single quarter of an hour; and

he remarks that Moses nowhere thinks it necessary to mention how a debt was to be proved before a judge. There was, however, an extensive system of appeal; from the judge over 10, the case was carried to the judges over 50, 100, and 1,000, and finally to Moses himself. As every Israelite was entitled to claim the land of his fathers at the jubilee year, and thus to place matters on the footing on which they were after the settlement in Palestine, debts and burdens on land were limited to claims to the fruits of forty-two harvests; but houses, with the exception of those of the Levites, might be sold in perpetuity (Lev. xxv. 29, 30, 32, 33). Children were in some cases given in pledge (Job xxiv. 9), and ultimately into slavery, in payment of debt (2. Kings iv. 1). Subsequent to the Captivity, the pressure of debts upon the poor in Israel became so intolerable, that Nehemiah espoused their cause, and insisted on a general remission (Nehem. v.), exacting from the rich an oath that they would never afterward press for payment. Debts of the character here alluded to probably resembled those which the recipients of parochial relief at the present day owe to the community, rather than debts in the commercial sense. In Matt. xviii., Christ refers to the custom of selling the debtor, his wife and children, and all that he had, in payment, rather as a general custom of all nations, than as one peculiar to the Jews—the 'certain king' being a typical instance of a man of substance.

Both in Greece (Plut. Vita Solonis 15) and in Rome (A Gell. xx. 1, 19; Liv. ii. 23) the creditor had a claim to the person of the debtor. Previous to the time of Solon, this arrangement had produced consequences at Athens closely analogous to those which afterward led to the struggles between the patricians and plebians at Rome; and his abolition of it forms one of Solon's many claims to the character of an enlightened legislator. By the Twelve Tables, it was enacted at Rome that if the debtor admitted the debt, or had had judgment pronounced against him for it, 30 days should be allowed him for payment. At the expiration of that period, he was liable to be given into the hands of his creditor, who kept him 60 days in chains, exposing him on three market days, and proclaiming his debt. If no one stepped in to release him, the debtor at the end of that time might be sold for a slave, or put to death. If there were several creditors, the letter of the law permitted them to cut their debtor in pieces, sharing him in proportion to their claims; but Gellius tells us that no Shylock ever was found at Rome. To treat him as a slave, however, and make him work out the debt, was the common practice; and the children in his power, in accordance with the whole constitution of society at Rome, followed his condition. The lex Pœtelia (B.C. 326) alleviated the condition of the debtors (*nexi*), by prohibiting the voluntary alienation of personal freedom. It is uncertain whether it also put an end to the involuntary alienation by the execution of judgment debts. 'During the *Republic* a

debtor could not be taken as a slave to satisfy a judgment debt. The imprisonment of the debtor in a public prison took the place of his reduction to slavery' (c. vii. 71, 1). Great prominence was given by the plebians to a change in the laws of debtor and creditor, on the occasion of their first secession, B.C. 494; and subsequently during the whole course of the struggles between the two orders. At Rome the creditor was not bound to maintain his debtor in prison, but it was an offence to prevent food and bedding being supplied. In A.D. 320 Constantine abolished imprisonment for debt, unless the debtor was contumacious. Under modern Christian civilization the propriety of abolishing the right of private imprisonment must be conceded.

During the feudal period, the person in general was not attachable for debt, imprisonment being inconsistent with the duties of warlike service to which every man was bound; and it was for the encouragement of commerce, and in consideration of the merchant having to deal with strangers and foreigners, that it was first introduced by the mercantile communities of Europe (Bell's *Commentaries*, seventh ed., II., 431). By the statute of Merchants, it was enacted, at Acton Burnel, England, 1282, that in lending money, a merchant might bring the borrower before the lord mayor of London, or the chief warden of another good town, and cause him to acknowledge his debt and day of payment. A recognizance was then enrolled, and an obligation written by the clerk, and sealed with the king's seal and the debtor's. Failing payment, the creditor was entitled to produce this obligation, and to demand a warrant to seize the person of his debtor, and to commit him to the Tower. The history of the law of imprisonment for debt in England is stated with great clearness by Mr. Bell in the section of his *Commentaries* to which we have just referred: see also IMPRISONMENT: DILIGENCE: EXECUTION: SANCTUARY: INSOLVENCY: etc. Generally, till the passing of the later bankrupt acts, the prisons of Britain were crowded with debtors. It was ascertained by parliamentary returns, that in the 18 months subsequent to the commercial panic of 1825, 101,000 writs for debt were issued from the English courts. The returns for 1880, which do not distinguish between debtors and other civil prisoners, give as the number of debtors and others under civil process in prison in England and Wales, 7771. In 1880, there were 145 persons imprisoned in Scotland under decrees of aliment: See DEBTS, IMPRISONMENT FOR: DEBTS, RECOVERY OF.

At present (1907) there is a uniform law in the United States by which an insolvent debtor can be discharged from the obligation due his creditors passed by the Congress of the United States and approved 1898, July 1, entitled 'An Act to establish a uniform system of bankruptcy throughout the United States.' In the absence of a federal bankruptcy law, each state has full authority to enact insolvent laws binding persons and property

within its jurisdiction, providing it does not impair the obligation of existing contracts, but a state cannot by such a law discharge one of its own citizens from his contracts with citizens of other states though made after the passage of such a law, unless they voluntarily become parties to the proceedings in insolvency. While this is true, each state has the power by general law, so long as it does not impair the obligation of any contract, to regulate the conveyance and disposition of all property real or personal within its limits or jurisdiction. Accordingly a discharge under a state insolvent law has no extra territorial force or effect. When Congress exercises its constitutional power to establish uniform laws on the subject of bankruptcy, the law passed under such power is paramount and exclusive of all state insolvent laws inconsistent therewith and the state laws relating to the subject matter are suspended or superseded during the existence of the federal law even as between citizens of the same state, but can in no sense be said to be repealed by it, and upon the repeal of the bankrupt law by Congress the insolvent laws of the several states become operative without re-enactment.

Four national bankrupt acts have been passed by Congress and all have met with opposition. The first 1800 was repealed 1803; the second adopted in 1841 was repealed in 1843; the third adopted in 1867 was repealed in 1878, the fourth was adopted 1898, July 1, and is, with amendments thereto, still in force.

The present act removes many objectionable features of prior national acts—provides for a seizure of all the debtor's property, makes preferences made by an insolvent and received by a creditor with reasonable cause to believe a preference was intended voidable and provides for a discharge except as to taxes due the United States, the state or any municipality, judgments in actions for fraud, or for alimony due or to become due or for maintenance or support of wife or child or for seduction of an unmarried female or for criminal conversation, or such as have not been scheduled unless the creditor had notice or actual knowledge of the proceedings in bankruptcy, or were created by fraud, embezzlement, misappropriation or defalcation while acting as an officer or in any fiduciary capacity.

The act also provides for a composition on terms approved by a majority in number and amount of creditors whose claims have been allowed.

Nothing prevents a composition by a debtor with his creditors upon such terms as they may all assent to, and such composition may or may not close or continue business and may or may not require the intervention of a person to act as trustee. But to be binding on any creditor he must assent to this.

The insolvent laws of the several states, sometimes styled General Assignment for Benefit of Creditors vary in detail but all recognize the statutory exemptions, liens and securities acquired by a creditor in good faith. See Bankruptcy and Insolvent Laws.

DEBTS OF MUNICIPALITIES.

DEBTS OF MUNICIPAL'ITIES: sums owed by cities and towns in their public capacity. Of municipalities in the United States that 1880 had 2,500 or more inhabitants, or that afterward attained that number and made official report to the census bureau, the total debt (bonded and floating) was, 1890, $745,919,786; total available resources, $290,575,846; annual interest charge $34,550,236. The financial status of the 32 principal cities, according to population in 1900, was as follows in 1902–3:

CITIES.	Net Debt.	Assessed Valuations.
New York	$230,437,022	$2,937,511,544
Chicago	15,123,000	402,495,131
Philadelphia	54,004,920	911,968,674
St. Louis	23,736,278	418,044,475
Boston	55,818,410	1,101,274,616
Baltimore	16,182,030	440,153,153
Cleveland	10,931,050	192,694,970
Buffalo	16,069,583	143,905,620
San Francisco	17,138	419,968,644
Cincinnati	25,429,763	211,347,880
Pittsburg	21,391,201	376,896,567
New Orleans	16,648,382	147,201,984
Detroit	4,101,397	249,503,720
Milwaukee	6,733,950	171,881,364
Washington	12,917,250	255,282,174
Newark, N. J.	13,498,798	164,491,412
Jersey City	20,064,393	100,550,026
Louisville	8,692,000	129,500,000
Minneapolis	6,634,669	121,279,537
Providence	13,785,814	197,873,000
Indianapolis	2,309,500	132,927,210
Kansas City, Mo	3,159,000	82,120,443
St. Paul	8,852,373	90,089,155
Rochester	8,218,641	117,789,110
Denver	1,351,800	3,684,500
Toledo	5,446,241	64,616,310
Allegheny	4,773,144	80,604,975
Columbus, O	4,573,843	68,047,300
Worcester	5,649,042	116,230,723
Syracuse	7,278,550	86,261,580
New Haven	3,617,836	104,660,554
Paterson, N. J.	4,099,917	2,273,100

The total debts of the 100 largest cities of the United States foot up about $845,000,000; of which New York has about one-third. $100,000,000 more is held by two others, Boston and Philadelphia, the three together carrying nearly half the entire municipal debt of the country. None others have even half so much as either of the two latter: and singularly, the fourth in the list, Cincinnati is only tenth in nominal, though higher in actual population. These four cities with Chicago, Cleveland, St. Louis, Baltimore, New Orleans, Buffalo, and Jersey City, have two thirds of the entire United States municipal debt. Washington, Newark, and Pittsburg are the only others which have over $10,000,000. It must be remembered that there are sinking funds which heavily reduce this total; and that most of it has been contracted for conveniences or beauties which attract population and so reduce taxes. More than one fifth of the whole, indeed,

is for water-works, which are not in any proper sense debts at all, as the water is paid for directly. The water-works systems of the country represent probably close on $200,000,000 of investment. About six per cent. is for parks and public places, nearly as much for bridges and harbor improvements, about 10 per cent. for railroad aid, and nearly four per cent. for public buildings. A great number of municipalities also are forbidden by law to incur above a certain fixed or contingent amount of debt.

DEBTS OF STATES: sums owed by the states of the Union in their public capacity. The latest returns of state bonded debts show a grand total of $177,559,948. After the assumption of their debts by the national government, the states incurred none of moment till they contracted small loans to assist the government in the war of 1812. They did not attempt any considerable loans for internal improvements till about 1820, but in the next five years had aggregate debts of $12,790,728. In 1830 the total had increased to $26,470,417; in 1835 during the great western 'boom', it had risen to 66,583,186; and in the frantic speculation of the three years, 1835–8, $107,823,808 were added to it. By 1840 it was over $200,000,000. But the improvements in western lands thus effected, though in the main good and useful, and some of them since profitable, had far outrun the immediate ability of the property developed to pay for them: several states defaulted principal or interest, or both, and as the Constitution had forbidden states to be sued in the courts, the foreign bondholders were without recourse when they repudiated their obligations. The chief offenders were Pennsylvania, Maryland, Michigan, Indiana, Illinois, Mississippi, and Louisiana. America was an unsavory name in foreign parts, and none the less so that some of the state leaders attempted justifications which the creditors thought impudent dishonesty. From 1840 on, a strong effort was made to have the general government assume the debts once more; in December 1842 a select committee of Congress was appointed to report, which it did the following March; the total amount then was $207,894,-613.35, and the interest charge $10,394,730.64. There were too many obstacles, and the plan fell through: the solvent and prudent states were not inclined to saddle themselves every few years with the obligations of those not so. As a fact, however, the states have not since abused their opportunities. The only cases of repudiation since have been among the southern states plundered by the 'carpet-bag' governments, and saddled with debts at once fraudulent and impossible of payment; though one or two have taken advantage of this plea to repudiate debts not owing to the carpet-bag régime and not difficult of payment. In 1880 the combined state debts amounted to $250,722,081; so that they have been reduced by nearly one-fourth within a generation, although not wholly by being paid. Nearly every state in the Union now has

constitutional prohibitions from borrowing over a certain amount or percentage for public purposes.

DEBTS, Recovery of: species of action frequent in courts of law. The great majority of the cases of debt in which the services of courts are required is of a kind in which there is no question of law or of fact—the debtor having no defense to make. The statistics of the English county courts give a striking illustration; of the number of cases entered for judgment, it appears that about 95 per cent. end in favor of the plaintiff; whereas, had there been any question really in dispute, the defendants, with the advantages which they possess, might have been expected to be at least as often right as the plaintiffs. The consequences of issuing a decree are now much less serious than formerly, as a creditor holding a judgment has not now the exorbitant powers over his debtor that he once had. The theory, accordingly, on which judicial proceedings are based, has very much changed. Formerly, lawyers thought that every case should come into court, prepared for being disputed on every point, and thus much expense was incurred before it was known whether there was to be any dispute at all. The end now in view is, that there should be a cheap means of obtaining judgment in undisputed causes; and that, at the same time, every precaution be taken that if the defender has any good ground of defense, he should have the opportunity of stating it; and that, when stated, it should receive due attention. Various law reforms have been carried to facilitate the recovery of debts with this end tacitly, at least, in view.

In Great Britain, if the debt—being the price of services rendered or of goods furnished—exceed £500 in amount, the creditor must, in England, proceed in one of the superior courts of law; and in Scotland he may proceed either before the superior court or before one of the sheriff-courts; but in any view, in the case of such a debt, he must prepare for considerable expense—the services of professional advisers being in practice unavoidable. If the debt do not exceed £50, the creditor may proceed in the English or Scotch county courts (in Scotland called the sheriff-courts), and the proceedings are simple and expeditious.

In the United States ample provisions of law exist for the recovery of the smallest debt one person may owe another; but the manner in which the action to recover must be taken depends in general on the amount of the obligation. Several states have tribunals for the collection of small sums, known as courts of small causes; in most of them, however, civil jurisdiction is vested in justices of the peace, who otherwise exercise criminal authority, for the purpose. The amount of money over which such officers have jurisdiction, varies from $20 in Me. to $500 in Tenn.; viz.: Va., $50; Ala., Conn., Dak., Del., Fla., Ga., Oklahoma, Ky., La., Md., Minn., N. H., N. J., N. Mex., R. I., S. C., Washington, W. Va., Wyoming, each $100; Miss., $150; Ill., Ind., Neb., N. C., N. Y., Tex., Vt., each $200; Ore., $250; Ark., Cal., Col.,

Kan., Mass., Mich., Mo., Nev., O., Penn., Utah., Wis., each $300; in Ia. the statute limit is $100, but where both parties consent a justice can act on cases involving not over $300. The law, as to where the debtor can be sued, varies in different states. In some it must be done in the town or city where he resides; in others a greater latitude is allowed. So, too, as to the manner of the preliminary action. In some states he is served with a summons on which the justice does or does not indorse the amount demanded by the plaintiff with the costs due on the same, when he may pay the amount to the constable or appear for trial; in others, especially where the amount sought to be collected exceeds the jurisdiction of the justice, the plaintiff may apply to the clerk of the lowest court having jurisdiction according to the amount involved, who will issue a summons and have it served by the sheriff or a deputy, and place the case on the docket for trial. When a justice or a jury has decided that a debtor must pay a claim with costs, the debtor may appeal to the next higher authority, but before doing so he will be required to file a bond, with two or more responsible sureties who sign for double the amount claimed, to secure the payment of costs should he lose the suit. Should the second decision also be adverse to him, he may carry his suit to the supreme court of the state on filing another bond to secure costs. In ordinary cases an appealed suit ends with the decision of the supreme court. Where, however, the amount involved is very large or peculiar conditions attach to the suit, it may be further taken to the court of errors and appeals, and, if deemed necessary, to the supreme court of the United States. The creditor is entitled to the same privileges of appeal should the first decision be adverse to him. Each appeal increases the costs, and by them a simple case may be kept from final adjudication for many years. In many cases a debtor will settle a claim when served with a summons, rather than risk a greater accumulation of costs. Should a defendant fail to appear in a hearing before a justice, that official will proceed without him, hear the case, and if the claim is proved, enter judgment against the defendant for the amount due the plaintiff, and then issue an execution for its collection. An execution is issued also where a decision is rendered against a defendant, and he fails to satisfy the judgment. It is now the almost invariable rule to issue an execution authorizing an officer to levy upon the personal property of the debtor; if he have none, then upon the real; if none of that, then upon store goods, etc. A debt may be secured in some states, also by suing a third person who may be owing the defendant; this is called suing the garnishee. In levying on property under an execution the officer is obliged to use extreme caution, lest he select property exempted by law from sale or attachment, property already attached, or property covered by a chattel mortgage The amount and kinds of personal property exempted from seizure on execution are prescribed by the laws of the states, and differ in each.

DEBTS, Small: see Small Debts.

DEBUSCOPE, n. *dē'bŭs-kōp* [from the inventor, M. *Debus*, a French optician; and Gr. *skopeō*, I see]: modification of the kaleidoscope. It consists of two highly polished silvered plates, set at an angle of 70° with each other; particularly intended for the use of draftsmen who are required to design ornamental patterns for fabrics.

DÉBUT, n. *dĕ-bô'* [F]: entrance; first appearance; first step or attempt; specially the first appearance of an actor or actress on the stage, or of a musical peformer in public; sometimes the first appearance in a particular place, Débutant, n. *dĕb'ô-tăng'*, a man or boy who makes a first appearance as a performer; a novice. Deb'utante, n. *-tăngt'*, an actress or performer who makes her first appearance before the public; a young lady just introduced to society.

DECA, *dĕk'a* [Gr. signifying 'ten']: of frequent occurrence in composition; as in *Decapolis*, union of ten cities; *Decalogue*, the ten commandments; *decamètre*, a measure of ten mètres.

DECACHORD, n. *dĕk'ă-kawrd* [Gr. *deka*, ten; Gr. *chordē*; L. *chorda*, a string]: ancient kind of guitar with ten strings, similar to the common guitar, only larger in the body, and with a broader finger-board. The lower strings have no frets, being used only as open notes.

DECADE, n. *dĕk'ād* [F. *décade*—from Gr. *dekas*, the number ten; *dekădos*, of the number ten]: the sum or number of ten; a group of ten, as of years. Dec'adal, a. *-ă-dăl*, pertaining to or consisting of ten.—*Decade*, as applied to time, was used in the calendar of the French republic to designate their week of 10 days. Each month, of 30 days, was divided into three decades. The days of each decade were named *primidi*, *duodi*, *tridi*, *quartidi*, *quintidi*, *sextidi*, *septidi*, *octidi*, *nonidi*, and *decadi*. The tenth, or *decadi*, was the day of rest; and, as the republic acknowledged no definite religion, was devoted to the practice of and exhortation to virtue. The republican year numbered 36 decades, and had thus only 360 days. The remaining five (in leap years, six) were devoted as holidays at the end of the year, without being numbered.

DECADENCE, n. *dĕ-kā'dĕns*, or Deca'dency, n. *-dĕn-sĭ* [F. *décadence*—from L. *de*, *cadens*, falling]: state of decay. Deca'dent, a. *-dĕnt*, decaying.—Decadence in art characterizes the state of a school of art which has passed the period of its highest excellence. In Greece, art in all its forms reached its acme in the time of Pericles; and though many exquisite works were produced at a later period, they all belong to the decadence of Greek art. In Rome both art and literature culminated in the time of Augustus, and from that time a decadence set in which soon became very obvious and rapid. The school of the *Renaissance* came to perfection with Raphael; even the Caracci belong to its decadence; and the decline was continuous through the *rococo* of Louis Quinze, till art became nearly extinct in

Europe. In the beginning of the reign of George IV., it probably reached as low a point in England as it ever attained in any civilized country.

DECAGON, n. *dĕk′ă-gŏn* [Gr. *deka*, ten; *gonĭă*, a corner]: in *geom.*, plane geometrical figure of 10 sides. When the sides are equal, the figure is called a regular decagon. A decagon may be formed from a pentagon (q.v.), by forming any irregular triangles on its sides in such a way that no two of them shall have their sides in the same straight line. A regular decagon is got from a regular pentagon by describing a circle round the latter, bisecting the arcs between its angular points, and drawing lines joining the angular points to the points of section.

DECAGRAM, or DECAGRAMME, n. *dĕk′a-grăm* [F. *décagramme*—from Gr. *deka*, ten: F. *gramme* (q.v.), a weight]: a French weight of ten grammes, or 154 + grains.

DECAGYNIAN, a. *dĕk′ă-jĭn′ĭ-ăn* [Gr. *deka*, ten; *gūnē*, a female]: in the *Linnæan system*, pertaining to the order of plants *Decagynĭă*, having ten pistils, or whose pistils have ten free styles.

DECAHEDRON, n. *dĕk′ă-hē′drŏn* [Gr. *deka*, ten; *hedra*, a base, a seat]: a solid figure with ten sides. DEC′AHE′DRAL, a. having ten sides.

DECAISNEA, *dĕ-kā′nē-a* or *dĕ-kās′nē-a:* genus of plants of the nat. ord. *Lardizabalaceæ*, nearly allied to *Stauntonia*. It contains only one known species, recently discovered, native of the Himalaya Mountains, at an elevation of 7,000 ft. It is a very remarkable plant, and the only one of its nat. ord. which is not a climber. It sends up from the root several straight erect branches like walking-sticks, which bear spreading pinnated leaves, two ft. long, standing out horizontally. The flowers are unisexual, green, and in racemes. The fruit is yellow, resembles a short cucumber, being about four inches long, and one inch in diameter. It is full of a soft milky pulp and large black seeds. Two or three fruits grow together. The pulp is sweet and wholesome, much eaten by the natives of the Himalaya.

DECALITRE, n. *dĕk′ă-lē′tr* [Gr. *deka*, ten: F. *litre*, a quart]: in the *French metric system*, a measure of capacity of ten liters: see LITRE.

DECALOGUE, n. *dĕk′ă-lŏg* [F. *décalogue*—from Gr. *deka*, ten; *logos*, speech or word]: the ten commandments: the term usually applied by the Greek Fathers to the law of the two 'tables of testimony' given by God to Moses on Mount Sinai. These tables were made of stone, and the commandments inscribed thereon are said to have been 'written by the finger of God.' The commandments are not numerically divided in the Pentateuch, and it has been supposed by some that the number *ten* was chosen, because ten was considered the most perfect number As, however, there *are* ten distinct injunctions, it is superfluous to allege any other reason for the division than the simple fact, that

this is the correct enumeration. Philo-Judæus divides them into two *pentads*, the first ending with 'Honor thy father and mother,' etc.; but the general opinion among Christians is, that the first table contained those which enjoin man's duty to God (comprising the first four), and the second, those which enjoin upon us man's duty to his fellow-creatures (comprising the last six). The Talmudists make the introductory words, 'I am the Lord thy God, who brought thee out of the land of Egypt, out of the house of bondage,' to be the first commandment, and in consequence to keep the number *ten* are obliged to run the next two into one. But the words quoted obviously contain no *command* but are a preface setting forth the grand general reason why the Israelites should yield implicit obedience to the injunctions which follow. Hence Origen commences the decalogue with, 'Thou shalt have no other gods before me.' His division is that in use in the Greek, and in all the Protestant churches except the Lutheran; while from the writings of Philo and Josephus, it appears that this was the received division of the Jewish Church also. The Masoretic division is that which is adhered to in the Rom. Cath. and Lutheran churches. According to it, the first two commandments, that concerning the worship of God, and that concerning the worship of graven images, constitute but one. The number ten, however, is here also preserved by dividing the tenth into two, the first of which is made to be, 'Thou shalt not covet thy neighbor's house,' and the second, 'Thou shalt not covet thy neighbor's wife, nor his manservant,' etc., to the end. There are two versions of the decalogue in the Pentateuch; the first in Exodus xx., the second in Deut. v. These are substantially and almost verbally the same, except in regard to the fourth commandment, for the observance of which the reason assigned in the former differs from that in the latter.

DECAMERON: see Boccaccio.

DECAMETRE, n. *děk′ă-mā′tr* [Gr. *deka*, ten: F. *mètre* (see Metre 2)]: a French measure of length, nearly eleven English yards.

DECAMP, v. *dĕ-kămp′* [F. *décamper*, to march off—from L. *dis*, away; It. and Sp. *campo;* L. *campus*, a plain]: to remove from a camp; to walk or move off; to depart hastily. Decamp′ing, imp. Decamped′, pp. *-kămpt′*. Decamp′ment, n. departure from a camp.

DE CAMP, John C., u.s.n.: 1812–1875, June 25; b. N. J. He entered the U. S. navy as midshipman 1827, became passed midshipman 1833, lieut. 1838, commander 1855, capt. 1862, commodore 1866, and was retired with the rank of rear-admiral 1870. During his service he was attached to the *Constitution* on the African coast 1854, was light-house inspector, commanded the *Iroquois* in the attack on Forts Jackson and St. Philip and at the capture of New Orleans 1862, and took part in the siege of Vicksburg and in numerous operations on the Mississippi.

DECAMPS, *dĕh-kŏng′*, Alexandre-Gabriel, 1803–1860, Aug. 22; b. Paris: French painter. He was a pupil

of De Pujol, but soon began a style of his own, which was long in becoming popular. About 1860 he made a tour in the East, and for several years after his return he painted chiefly eastern subjects. Gradually, but slowly, his works grew into favor. He painted landscapes, genre pieces, and historical pictures; but his animal pictures first attained popularity among his countrymen. The monkey was his specialty; and into such pictures Decamps introduced much of that humor for which he was so distinguished. His historical pieces are now considered by English critics among the finest productions of the French school. In this class of works his conceptions were both fine and grand; but his treatment was free even to irregularity. His drawing was often careless and sometimes defiant of perspective for the sake of some favorite effect. Decamps was made a chevalier of the Legion of Honor 1839, and became officer 1851. He died at Fontainebleau.

DECANAL, a. *dĕk'ă-năl* [see DEAN]: pertaining to a deanery.

DECANDOLLE, *dĕh-kŏng-dol'*, AUGUSTIN PYRAME: eminent botanist: 1778, Feb. 4—1841, Sep. 9; b. Geneva: descended from an ancient noble family of Provence, which was compelled to seek refuge in Geneva from religious persecution about 1668. His father was a syndic of Geneva, and had an estate near Yverdun, where much of Decandolle's boyhood was spent. He received his education in the gymnasium of Geneva, distinguished himself by his attainments in classical scholarship and his love of poetry, as well as by his delight in the study of history, to which and to the profession of law he proposed to apply himself. But after he had begun his studies for this profession, the union of Geneva with the French republic in 1798 made such a change in his prospects, that he thought proper to relinquish it for that of medicine and botany. He prosecuted his studies in Paris, where his botanical publications soon won for him a distinguished place. A work on Succulent Plants (Par. 1799–1803), one on the species of *Astragalus* (Par. 1802), and some less important works, were followed by his extremely valuable *Essai sur les Propriétés Médicales des Plantes* (Par. 1804). He delivered his first botanical lectures in the Collége de France. In 1804, appeared the first vol. of his *Flore Française*. Employed by the govt., he visited all parts of France and Italy, 1806–12, investigating their botany and agriculture. On the fall of Napoleon, he was compelled to retreat to Geneva, where a professorship of botany was founded for him, and where he spent the remainder of his life. His *Théorie Elémentaire de Botanique* (Par. 1813) was followed by *Regni Vegetabilis Systema Naturale* (2 vols. Par. 1818–21), and *Prodromus Systematis Naturalis Regni Vegetabilis* (vols. 1–10, Par. 1824–46). These works greatly promoted botanical knowledge. Decandolle's labors established and improved the natural system which Jussieu had attempted to found: see BOTANY. The latter years of Decandolle's life were years of sickness and suffer-

ing, and he died of dropsy. He bequeathed his collections —including a herbarium of more than 70,000 species of plants—to his son, ALPHONSE DECANDOLLE, on condition of his keeping them open to the public, and of his carrying on the *Prodromus*. The younger Decandolle, who completed the work with the 17th vol., is a botanist of no mean fame, and author of several botanical works, among which are: *Introduction à la Botanique* (1835), and *Géographie Botanique* (1855); also *Histoire des Sciences* (1872).

DECANDRIAN, a. *dĕ-kăn′drĭ-ăn*, or DECAN′DROUS, a. *-drŭs* [Gr. *deka*, ten; *aner* or *andra*, a male]: in the *Linnæan system*, pertaining to the order of plants *Decandrĭă*, having ten stamens.

DECANGULAR, a. *dĕk-ăng′ū-lĕr* [Gr. *deka*, ten: L. *angŭlus*, a corner]: having ten angles.

DECANT, v. *dĕ-kănt′* [F. *décanter*, to decant—from It. *decantare*, to pour wine out gently: Icel. *kantr*, a side: Dan. *kant*, the edge: Eng. *cant*, to tilt up on one side, so as to rest on the other edge: L. *canthus*, the rim of a wine-jar]: to pour off a liquid from a vessel by tilting it on edge, so as not to disturb the grounds; to pour from one vessel into another. DECANT′ING, imp. DECANT′ED, pp. DECAN′TER, n. *-tĕr*, a glass bottle for holding liquors, from which they may be poured into drinking glasses. DECANTATION, n. *dē′kăn-tā′shŭn*, the act of pouring from one vessel into another.

DECAPITATE, v. *dĕ-kăp′ĭ-tāt* [mid. L. *decapĭtātus*, beheaded: F. *décapiter*, to behead—from mid. L. *decapĭtārĕ*—from L. *de*, *caput*, the head]: to behead; to cut off the head. DECAP′ITATING, imp. DECAP′ITATED, pp. DECAP′ITA′TION, n. *-tā′shŭn*, the act of beheading: see CAPITAL PUNISHMENT.

DECAPODA, n. plu. *dē-kăp′ō-dă* [Gr. *deka*, ten; *pous*, *podos*, a foot]: the highest order of crustacea having ten legs or claws, as the common crab, the crayfish, the lobster, and the prawn; also an order of cuttle-fishes. DECAPOD, n. *dĕk′ă-pŏd*, an animal having ten feet: ADJ. having ten feet. DECAPODAL, a. *dē-kăp′ō-dăl*, ten-footed: see CRAB: CRUSTACEA.

DECAPOLIS, *dē-kăp′ō-lĭs:* district of e. Palestine, near the sea of Galilee, on both sides of the Jordan; deriving its name from a group of ten cities, Canatha, Damascus, Dion, Gadara, Gerasa, Hippos, Pella, Philadelphia, Raphana, and Scythopolis. They are supposed to have been first built by the Greeks, afterward settled by the followers of Alexander the Great, subdued by the Maccabees and rebuilt, colonized, and granted special political privileges by the Romans after the conquest of Syria, B.C. 65. Canatha, Damascus, Gadara, and Scythopolis are the only ones now inhabited, and Damascus is the only one of material importance. All, however, except Raphana, have been identified. Scythopolis, formerly second in importance, is now the village of Beisan, and was the only one of the group on the w. side of the river.

DECARBONIZE, v. *dē-kâr'bō-nīz* [L. *de*, down; *carbōnem*, coal]: to deprive of carbon, as in turning cast iron into steel. DECAR'BONI'ZING, imp. DECAR'BONIZED, pp. *-nīzd*.

DECASTICH, n. *dĕk'ă-stĭk* [Gr. *deka*, ten; *stichos*, an order, a row, a line]: a poem consisting of ten lines.

DECASTYLE, n. *dĕk'ă-stīl* [Gr. *deka*, ten; *stulos*, a column]: a portico having ten pillars or columns in front.

DECASYLLABIC, a. *dĕk'ă-sĭl-lăb'ĭk* [Gr. *deka*, ten; *sullabē*, a syllable]: having ten syllables.

DECATUR, *dē-kā'tėr*, Ill.; city, capital of Macon co., near the Sangamon river, and on the Wabash, the Ill. Central, The Cin., Hamilton and Dayton, and the Vandalia R. R's It is the centre of trade for several counties, and being in the midst of the famous Illinois corn-belt it has a number of corn mills, the largest in the United States. It has also railroad shops, iron works, engine and boiler works, casket and coffin factories, bridge works, and mantel factories. By the census of 1900 there were 239 manufacturing establishments in the place, with an invested capital of $3,632,263, and an annual product amounting to $5,896,492. The city owns and operates the electric light plant and water works. The principal departments of the James Milliken University are located here, and the public school system is excellent, including a well equipped high school. There are three national banks in the city. The government is administered under a charter which provides for a mayor, elected biennially, and a city council. Pop. (1910) 31,140.

DECATUR, BATTLE OF: in De Kalb co., Ga.; 1864, July 20. A portion of Gen. Sherman's army, then on the march toward Atlanta, commanded by Gens. Thomas and Schofield, on reaching Decatur, village 5 m. e. of Atlanta, was overtaken by a Confederate force under Gen. Hood. The attack was made upon the Union line at Stone Mountain, 6 m. e. of the village. The Union loss was estimated at 1,500 in killed and wounded; and the Confederate at 5,000, of whom 500 dead and 1,000 severely wounded were left on the field.

DECATUR, STEPHEN, U.S.N.: 1751–1808, Nov. 14; b. Newport, R. I. In early life he engaged in the merchant marine service and became capt. of a vessel. He served in the revolutionary war as commander of two noted privateers, the *Royal Louis* and the *Fair American*, with which he inflicted considerable losses on English merchantmen; became post-capt. in the navy 1798, and as commander of the *Delaware* captured two fleet French privateers; commanded the Guadeloupe squadron of 13 vessels 1800 and was discharged from service and engaged in business in Philadelphia 1801.

DECATUR, STEPHEN, JR., U.S.N.: son of Capt. S. D.: 1779, Jan. 5—1820, Mar. 22; b. Sinnepuxent, Md. He was bred to a sea-faring life, appointed midshipman in

the navy 1798, commissioned lieut. 1779, promoted capt. 1804, and commodore 1810. While serving with the squadron sent to Tripoli after the pasha's declaration of war against the United States, 1801, he distinguished himself by many acts of heroism, particularly in 1804, Feb., when he led a picked crew into the harbor, recaptured the U. S. frigate *Philadelphia*, that had previously been captured while fast on a reef, set her on fire under the guns of the castle, and escaped to his vessel without injury The *Philadelphia* was totally destroyed, and the daring lieut. promoted capt. for his exploit. Later in the war he commanded the frigates *Constitution* and *Congress*. In 1810 he was assigned to command the frigate *United States*, which he had helped build, and with it captured the British frigate *Macedonian* at sea, 1812, Oct. 25. For this feat congress voted him a sword and a gold medal. He took his prize into New York harbor, whence, 1813, May 24, he attempted to sail with a squadron of 4 vessels, but was intercepted by part of the British blockading fleet off Montauk Point, L. I., and entering the harbor of New London was blockaded there over a year. He then received command of the frigate *President*, and while attempting to get to sea from New York, 1815, Jan., the vessel was considerably injured by striking the bar. She was pursued by four British frigates, and after a running fight of 8 hours, Com. Decatur was compelled to surrender, and with his ship was taken to Bermuda and there paroled. In 1815, May, he was sent with a squadron of 3 frigates and 7 other vessels to punish the Barbary powers for violation of their treaty obligations and their seizure of American merchantmen. He captured the Algerine flag-ship and admiral and a brig of war, June 18, arrived off Algiers June 28, and forced the dey to sign a treaty stipulating among other things that all Christian captives should be immediately released and that the United States should pay no more tribute to the dey. He then demanded indemnity and the release of prisoners of the bey of Tunis and the pasha of Tripoli, obtained prompt redress, and returned to the United States. In Nov. he was appointed a member of the board of naval commissioners, and held the office till his death, which was caused by a wound received in a duel with Com. James Barron at Bladensburg.

DECATUR, Stephen, U.S.N.: grandson of Capt. S. D., nephew of Com. S. Decatur, jr.: 1815–1876, Jan. 9; b. N. J. He entered the U. S. navy as a midshipman 1829, Mar. 17, was promoted to passed midshipman 1835, July 3, commissioned lieut. 1840, Feb. 25, commander 1861, July 20, capt. 1867, and commodore 1869. He was unemployed 1835–50, on the reserve list 1857–61, and on waiting orders 1864–66, and had served with the Mediterranean, Brazilian, West Indian, and East Indian squadrons.

DECAY, v. *dĕ-kā'* [Prov. *descaier;* F. *déchoir*, to fall away, to go to ruin—from L. *de; cădo*, I fall]: to fall away; to become less perfect; to fail; to decline; to waste away;

N. a falling away; a gradual failure; decline of fortune; corruption; rottenness: see DRY ROT. DECAY'ING, imp. DECAYED', pp. *-kād':* ADJ. reduced in means; impoverished; wasted away; rotten. DECAY'EDNESS, n. *-kā'ĕd-nĕs.* DECAYER, n. *dĕ-kā'ėr,* in *OE.*, that which decays; a causer of waste.—SYN. of 'decay, v.': to die; perish; impair;—of 'decay, n.': consumption; failure.

DECAZEVILLE, *dėh-kâz-vēl':* town in the dept. of Aveyron, south of France. It has extensive blast-furnaces and iron-works, said to be superior to any in France, and which, with the iron and coal-mines of the neighborhood, afford employment to the mass of the inhabitants. Pop. (1886) 7,981; (1891) 8,871.

DECCAN, *dĕk'kan* [Skr. *Dakshina,* the south]: term applied sometimes to the whole peninsula of Hindustan s. of the Vindhya Mountains which separate it from the basin of the Ganges; and sometimes restricted to that portion of the same vaguely bounded n. by the Nerbudda which falls into the Gulf of Cambay, and s. by the Kistna or Krishna, a tributary of the Bay of Bengal. Independently of this indefiniteness of meaning, the name, like that of the CARNATIC (q.v.), is rather of historical interest than of actual use.

DECEASE, n. *dĕ-sēs'* [OF. *deces;* F. *décès;* decease—from L. *decessus,* departed—from *de, cessus,* gone: It. *decesso*]: departure from this life; death: V. to die. DECEAS'ING, imp. DECEASED', pp. *-sēst'.*—SYN. of 'decease, n.': departure; demise; release.

DECEIT, n. *dĕ-sēt'* [OF. *decever;* F. *décevoir,* to deceive—from L. *decipĕrĕ,* to take away, to deceive—from *de, căpĕrĕ,* to take]: that which ensnares; the misleading any person; the leading of a person or an animal to believe what is false, or not to believe what is true; deception; fraud; trick; device. DECEIT'FUL, a. *-fûl,* tending to deceive or mislead; fraudulent; insincere. DECEIT'FULLY, ad. *-lĭ.* DECEIT'FULNESS, n. DECEIVE, v. *dĕ-sēv',* to mislead the mind; to cause to believe what is false, or not to believe what is true; to impose on; to cheat; to disappoint. DECEIV'ING, imp. DECEIVED', pp. *-sēvd'.* DECEIV'ER, n. one who. DECEIV'ABLE, a. *-ă-bl,* capable of being misled. DECEIV'ABLY, ad. *-blĭ.* DECEIV'ABLENESS, n. *-bl-nĕs,* liableness to be deceived; likely to deceive.—SYN. of 'deceit': illusion; delusion; stratagem; artifice; imposition;—of 'deceive': to delude; mislead; beguile; ensnare; entrap; defraud.

DE CELLES, *dė sĕl',* ALFRED DUCLOS: Canadian author: b. St. Laurent, Que. 1842: educated at Quebec Seminaire and in 1867 took up journalism as a profession; appointed assistant librarian of Parliament at Ottawa 1880 and general librarian 1885; chief works include: *Persecutions et Réparations* (1881); *Une parois se Canada au dix-septieme Siecle* (1882); *Oscar Dunn* (1886); *Notre Avenir* (1887); *La Crise du Regime Parlementaire* (1888); *A la Conquerte de la liberte en France et au Canada* (1890);

L'Hon. John Molson (1890); *Sir Alexander Lacoste* (1891); *Papineau; Extraits de sa Correspondence* (1891); *Les Etats Unis; Origine Institutions Developpements* (1896); *Papineau and Cartier* (1904).

DECEMBER, n *dĕ-sĕm'bẽr* [L. *december*—from L. *decem*, ten — *-ber* may be connected with Skr. *vara;* Pers. *bar*, time or period]: the twelfth and last month of the year—formerly the tenth month according to the old Roman calendar before the time of Julius Cæsar, when the year began with March. The Saxons called this month Mid-winter-month, and Yule-month.

DECEMPEDA, n. *dĕ-sĕm'pĕ-dă* [L. *decem;* ten; *pedēs*, feet]: a ten-foot rod employed by architects and surveyors for taking measurements. DECEM'PEDAL, a. *-dăl*, ten feet long.

DECEMVIR, n. *dĕ-sĕm'vẽr* [L. *decem*, ten; *vir*, a man; *vī-rī*, men]: one of the ten magistrates of anc. Rome who, for a short time, possessed absolute power. DECEM'VIRI, n. plu. *-vĭ-rī*. DECEM'VIRAL, a. *-vĭ-răl*, pertaining to. DECEM'VIRATE, n. *-rāt*, the office of a decemvir; the period or duration of government by decemvirs.—The Decemviri were appointed as a sort of legislative committee, to draw up a code of laws at Rome. The ground-work on which they proceeded, was the information previously collected by three commissioners sent for that purpose to Greece. On the return of the three commissioners, after a year's absence, a violent dispute arose between the patricians and plebeians as to which of the orders should be intrusted with the revision of the laws. The dispute ended in favor of the patricians, and 10 patrician lawgivers were consequently appointed, to whom, moreover, the whole government of the state was intrusted during the year for which they were to hold office. The experiment was eminently successful; the work of legislation was carried on with zeal and success, and the state was governed with prudence and moderation. Their labors not being quite finished, a new body of decemviri was appointed; only *one*, the notorious Appius Claudius, belonging to the previous commission. In their magisterial and executive capacities, the new decemviri acted in the most tyrannical manner. In place of the fasces alone being carried before the decemvir who presided for the day, as on the former occasion, each of the ten was now attended by 12 lictors, who carried not only the rods, but also the ax, the emblem of sovereign power. Every species of outrage was committed on the persons and families of the plebeians, and when the term of their appointment expired, they refused either to resign or to allow successors to be appointed to them. At length the iniquitous decision of Appius Claudius (q.v.) in the matter of Virginia brought affairs to a climax. A popular insurrection broke forth, the decemviri were driven from their office, and the tribunes and other ordinary magistrates of the republic were reappointed. The occurrence is the subject of one of Macaulay's most spirited *Lays of Ancient Rome.*

DECENCY, n.: see under DECENT.

DECENNARY, n. *dē-sĕn'nėr-ĭ* [L. *decem*, ten; *annus*, a year]: a period of ten years: see TITHING. DECEN'NIAL, a. *-nĭ-ăl*, lasting for ten years; happening every ten years. DECEN'NIALLY, ad. *-lĭ*. DECENNIAL GAMES, in Rome, recurring every ten years, in honor of the refusal of Augustus to be made emperor for life, and of his proposal to be re-elected every tenth year.

DECENNOVAL, a. *dĕ-sĕn'nō-văl*, or DECEN'NOVARY, a. *-vĕr-ĭ* [L. *decem*, ten; *novem*, nine]: pertaining to the number nineteen; designating a period or circle of nineteen years.

DECENT, a. *dē'sĕnt* [F. *décent*—from L. *decens* or *deccn'-tem*, becoming: It. *decentc*]: becoming in speech, behavior, dress, etc.; fit; comely; not gaudy; moderate; not large; respectable. DE'CENTLY, ad. *-lĭ*. DE'CENCY, n. *-sĕn-sĭ*, state or quality of being suitable or becoming in words or behavior; propriety; modesty. DE'CENTNESS, n. the state of being decent.—SYN. of 'decent': proper; becoming; seemly; suitable; just; right; modest; decorous; sufficient.

DECEPTIBLE, a. *dĕ-sĕp'tĭ-bl* [L. *deceptus*, ensnared, beguiled—from *de*, *captus*, taken, seized]: that may be deceived. DECEP'TIBIL'ITY, n. *-bĭl'ĭ-tĭ*, capability of being deceived. DECEP'TION, n. *-sĕp'shŭn* [OF. *deception*—from L. *deceptĭōnem*]: the act of misleading; state of being deceived; a cheat. DECEP'TIVE, a. *-tĭv*, tending to mislead or impress with false opinions. DECEP'TIVELY, ad. *-lĭ*. DECEP'TIVENESS, n. tendency to deceive; the power or ability to deceive. DECEPTIOUS, a. *dĕ-sĕp'shŭs*, in *OE.*, deceptive.

DECEP'TION ISLAND: near South Shetland, in the Antarctic Ocean. Under the reign of almost perpetual winter, it possesses hot springs and a volcano. In these contrasts it resembles Iceland with its Hecla and its geysers. But Deception Island is peculiar in this, that its very material consists of alternate layers of ashes and ice. It contains a deep lake five m. in circuit.

DECERN, v. *dĕ-sėrn'* [F. *décerner*, to award—from L. *decernĕrĕ*, to decide—from *de*, *cernĕrĕ*, to judge: It. *decernere*]: in *Scots law*, to determine; to pass a decree; to judge. DECERN'ING, imp. DECERNED', pp. *-sėrnd'*. DECERNITURE, n. *dĕ-sėrn'ĭ-tūr*, in *Scots law*, a decree or sentence of a court.

DECHENITE, n. *dek'ĕn-īt* [named for a German geologist, *Von Dechen*]: a red, yellow, or brown mineral, occurring massive, botrioydal, nodular, stalactitic, and at times slightly columnar. Hardness, 3–4; sp. gr. 5.6–5.8; composition: sesquioxide of vanadium, 16.81–49.27; protoxide of lead, 48.7–57.66; protoxide of zinc, 0–21.47. It is found in Germany.

DECIDE, v. *dĕ-sīd'* [F. *décider*—from L. *decīdĕrĕ*, to cut off, to determine—from *dc*, *cædo*, I cut or strike: It. *decidere*—*lit.*, to strike or cut out the line to be followed]: to ter-

minate or settle; to determine; to end; to fix the event of; to come to a conclusion; to form a definite opinion. DECI'DING, imp. DECI'DED, pp.: ADJ. clear; that puts an end to doubts; unequivocal; resolute; determined. DECI'DEDLY, ad. *-lĭ*, in a determined manner; clearly; indisputably. DECI'DABLE, a. *-dă-bl*, that may be decided. DECI'DER, n. one who.

DECIDENCE, n. *dĕs'ĭ-dĕns* [L. *decidens*, falling off—from *de*, *cado*, I fall]: the act of falling off; downfall.

DECIDUOUS, a. *dĕ-sĭd'ū-ŭs* [L. *decidŭŭs*, that falls down or off—from *de*, *cădo*, I fall]: liable to fall; not perennial or permanent; that falls in autumn; in *zool.*, applied to parts that fall off or are shed during life. DECID'UOUSNESS, n. the quality of falling once a year. DECIDUOUS TREES, those which annually lose and renew their leaves. The greater part of the trees and shrubs of temperate regions are deciduous; but within the tropics, the forest retains always its luxuriance of foliage, except in countries where the diversities of condition, occasioned by the wet and dry seasons, are extreme, and there many trees lose their leaves in the dry season, from causes apparently the same with those which produce this effect on the approach of winter in colder countries, and which are connected with a sort of rest of the plant, or partial suspension of the active functions of vegetable life. Trees not deciduous are called EVERGREEN (q.v.).

DECIGRAM, or DECIGRAMME, n. *dĕs'ĭ-grăm* [F. *décigramme*]: a weight of one-tenth of a gramme; 1.5432 grains avoirdupois.

DECILITER, n. *de-sĭl'ĭ-tẽr* or *dĕs'ĭ-lī-tẽr*, or DÉCILITRE, *dā-se-lē'tr* [F. *décilitre*]: French measure of capacity equal to the tenth part of a liter, or 0.176077 of a pint.

DECIMATE, v. *dĕs'i-māt* [L. *decimātus*, selected by lot every tenth man for punishment—from *decem*, ten: It. *decimare:* F. *décimer*]: to destroy a tenth part, as by disease; to punish with death every tenth man; to take a tenth part; to destroy any large portion. DEC'IMATING, imp. DEC'IMATED, pp. DEC'IMA'TION, n. *-mā'shŭn* [F.—L.]: a selection of every tenth by lot; destruction of any large portion: ancient form of military punishment: when a considerable body of troops committed some grave military offense, which would be punished with death if committed by an individual, the punishment was awarded to one-tenth of them by lot, instead of to the whole number, in order that the army might not be too much weakened. DEC'IMA'TOR, n. *-tẽr*, one who.

DECIMETRE, n. *dĕs'ĭ-mā-tr* [F.]: a French measure of length, equal to the tenth part of a metre, or 3.9371 inches.

DECIMI, *dĕs'ĭ-mī*, in Music: interval of ten diatonic degrees, as from C to E, or third above the octave, as which it is always treated in harmony.

DECIMO-SEXTO, n. *dĕs'ĭ-mō-sĕks'tō* [L. *decĭmus*, tenth; *sextus*, sixth]: a book made up of sixteen leaves to each sheet.

DECIPHER, v. *dĕ-sī′fėr* [F. *déchiffrer*, to decipher—from L. *de*, not: F. *chiffre*, a figure]: to read ciphers; to explain; to unfold; to unravel; to ascertain the meaning of anything obscure or difficult to be understood. DECI′PHERING, imp. DECI′PHERED, pp. *-fėrd*. DECI′PHERER, n. *-fėr-ėr*, one who. DECI′PHERABLE, a. *-fėr-ă-bl*, that may have its meaning ascertained. DECI′PHERMENT, n. *-fėr-mĕnt*, the act of deciphering.

DECISION, n. *dĕ-sĭzh′ŭn* [F. *décision*—from L. *decīsĭōnem*—from *decīsus*, cut off, determined (see DECIDE)]: determination; final judgment or opinion; the end of a struggle; firmness and strength in character. DECI′SIVE, a. *-sī′sĭv*, final; conclusive; having the power to settle a contest or an event; decided; positive. DECI′SIVELY, ad. *-lĭ*. DECI′SIVENESS, n. the quality of ending doubt or controversy.—SYN. of 'decision: resolution'; conclusion; settlement.

DECIUS, *dē′she-us*, CAIUS MESSIUS QUINTUS TRAJANUS: Roman emperor: reigned A.D. 249 to 251: born in Lower Pannonia. Being sent in 249 by Philippus, the ruling emperor, to restore to subordination the army of Mœsia, the troops proclaimed him emperor against his will, and forced him to march upon Italy. Philippus encountered the forces of Decius near Verona, but was defeated and slain. Decius assumed the government of the empire in the end of 249, but his brief reign was one of restless warring with the Goths, fighting against whom he was killed near Abricium, in the close of 251. During the reign of Decius it was determined to revive the censorship, and to persecute the Christians, in order by the first to check the growing immorality of the state, and by the second to bring back the purity of the Roman religion, and regain for Rome favor of the gods The censorship was never fully restored, but a barbarous persecution of the Christians took place. In Rome, Antioch, and Jerusalem, the several bishops were massacred; Origen famous among the early Fathers, was subjected to the most acute tortures; dreadful cruelties were perpetrated also at Alexandria. Many Christians, in Africa, disowned their religion, until the persecution had passed.

DECK, n. *dĕk* [old Dut. *decken*, to hide: Dut. *dekken*, to cover; *dĕk*, a cover, a ship's deck: O. H. G. *dekjah*. Icel. *thekja*, to cover, to roof: Ger. *dach*, roof: L. *tectus*, covered]: the planked flooring of a ship—large ships having several decks; a pack of cards piled regularly on each other: V. to adorn; to clothe or dress with great care; to furnish with, a deck. DECK′ING, imp. DECKED′, pp. *dĕkt′*. QUARTER-DECK, that which is above the upper deck, and which reaches from the stern to the gangway. DECKER, n., a ship having decks; one who adorns. DECK-BRIDGE, one in which the track occupies the upper stringer as distinguished from one in which the track, whether for cars or carriages, rests on the lower stringer. DECK-LIGHT, a bull's eye or thick glass window set into an upper deck,

to light a cabin or state-room. To CLEAR THE DECKS, among seamen, to make everything clear for a naval battle by putting away all things that would prove hindrances. To SWEEP THE DECK, in card-playing, to carry off all stakes on the card table.

DECK: nearly flat planked covering to a ship, forming a flooring to the persons above it, and a shelter to those below it. There may be several such in a ship, one under another, not only does each serve the purposes here named but it helps to strengthen the vessel, by holding the sides together.

Where there are several decks in a ship, they are distinguished by different names. Thus, the *upper* or *spar* deck, open to the sky, stretches from stern to bow, and is conventionally divided into *quarter-deck*, *waist*, and *forecastle*. The *main* or *gun* deck is immediately below the upper deck. The *middle* deck is next under the main deck, and is rather thicker and stronger. The *lower* deck is in the broadest part of the ship, and in war ships is made very strong, to receive the heaviest guns. A *flush* deck is a continued floor from stern to stern, upon one range, without any break.

DECKANEE' HEMP: see HIBISCUS.

DECKEN, *děk'kĕn*, KARL KLAUS VON DER; German African traveler; b. Kotzen, Mark of Brandenburg, 1833, Aug. 8; d. Africa, 1865, Sep. 25. He entered the Hanoverian army, which he left after 10 years' service (1860) to follow his bent toward travel. On Barth's advice he went to Zanzibar, and started thence on a journey to Lake Nyassa, which failed through the treachery of his Arab guide. Next year he started on a second and successful journey to the mountain regions of Kilima-Njaro. In the following year, with Kersten, he climbed that mountain to the height of 13,780 feet. In 1863 he made an extensive voyage along the east coast of Africa, after which he returned to Europe to plan a great expedition for the exploration of east African rivers. This journey ended in disaster, and Decken was murdered by a Somali.

DECKER, *děk'ĕr*, Sir MATTHEW, Bart: b. Amsterdam toward the close of the 17th c.; d. 1749, Mar. 18: political economist. He came to London 1702, was naturalized as an English subject in the following year, and having embarked in commerce, attained the greatest success; received a baronetcy in 1716, and three years afterward, took his seat in parliament as member for Bishop's Castle. He sat in the house only for four years.

Decker, in 1743, published a pamphlet, which in 12 years ran through seven editions, in which he proposed to raise all the public supplies from a single tax—upon houses. According to Decker's calculation, there were then in England, exclusive of Wales, 1,200,000 houses; of these he meant to tax only one-half, counting off 500,000 as inhabited by the working classes and 100,000 as being uninhabited. By this means, he proposed to

raise an annual revenue of £6,000,000, which sum was £1,000,000 more than the expenses of the government of that day required. The surplus was to be applied as a sinking fund for the purpose of discharging debt.

DECLAIM, v. *dĕ-klām′* [F. *déclamer*—from L. *declamārĕ*, to declaim, to cry aloud—from *de*, *clamārĕ*, to cry out—*lit.*, to cry out loudly]: to harangue; to speak loudly and earnestly, with a view to convince, or to move the passions; to speak with force and zeal; to inveigh; to speak pompously or noisily. DECLAIM′ING, imp. DECLAIMED′, pp. *-klāmd′*. DECLAIM′ER, n., and DECLAIM′ANT, n. one who. DECLAMATION, n. *dĕk′lă-mā′shŭn* [F.—L.]: a set or prepared speech; a harangue; in *schools* and *colleges*, a speech, not original delivered by a student; a noisy address without solid sense or argument. DECLAMATORY, a. *dĕ-klăm′ă-tėr-ĭ*, pertaining to declamation, appealing to the passions; applied to noisy address; bombastic. DECLAMANDO, ad. *dĕ-kla-măn′dō* [It.]: in *music*, in a declamatory style.

DECLAMA′TION: art of speaking according to rules, whereby the sense of the words, as well as the feeling and sentiment, is naturally and characteristically represented. Recitation, therefore, whether spoken or sung, is subject to the laws of declamation, from which it derives its value and significance. Perfect declamation implies correctness of speech, distinctness and clearness of enunciation, and a well-toned voice. Declamation is therefore clearly of a musical nature. In music, however, declamation is so far different from the declamation of speaking, that the singer must adhere to what the composer has written, as it is the latter who fixes the whole of the intonation, modulation, and phrasing, also the *tempi* and expression, and who frequently sacrifices the correctness of the declamation to the charm of some peculiar melodic phrase or pleasing rhythm, or vocal musical embellishment. The truth and beauty of correct musical declamation are always endangered by a translation of the original words into another language, since it is scarcely possible to fit syllable for syllable, accurately to the accent of the music. The master-works of many great composers suffer much in this respect. The ancients had a kind of note, or sign of intonation, which they placed over or under the words, possibly to decide whether the accent should be given by a high or by a low tone, and thus to regulate the modulation of the voice. That the theatrical declamation of the ancients resembled the musical recitative of the present day, is generally admitted.

DECLARA′TION, in Common Law: pleading in which the plaintiff in an action sets forth his case against the defendant. The plaintiff might declare as soon as the defendant had made appearance in answer to the Writ of Summons (q.v.), or, where the summons was not specially indorsed (see INDORSEMENT), on failure of the defendant to make appearance. If the plaintiff failed to declare

within a certain time, the defendant might obtain judgment of *Non Pros.;* and if the failure continued for a year after the writ of summons is returnable, the plaintiff was deemed out of court. On application to a judge, a plaintiff, if not prepared, might obtain time to declare; and a defective declaration might be amended. In England, since the Judicature Act of 1875, the declaration is no longer used in actions, and the *Statement of Claim* takes the place both of it and of the former BILL IN CHANCERY. In the United States some states have substituted a 'complaint' for the declaration; others, mostly of the older states, hold to the common-law system of declaration, which generally obtains also in the United states courts.

DECLARA'TION, instead of oath, in Law: solemn affirmation by a witness who conscientiously objects to swearing to the truth of his testimony, as do members of the Society of Friends, and some others: see AFFIRMATION: OATH.

DECLARATION, DYING: declaration made by a person under the conviction of his impending death, and who does not survive the trial of one accused of causing his fatal injury; known usually as 'ante mortem declaration.' Such declarations are of peculiar value for the ends of justice, in the event of the death. They form an exception to the general rule that secondary or hearsay evidence is inadmissible. In cases of murder, the dying declaration of the sufferer as to the circumstances of the crime is always admitted as evidence on the trial of the prisoner, provided that it was deliberately emitted while the deceased was in possession of his faculties, and that it is proved by credible witnesses. If it be possible, the dying declaration should always be committed to writing, and tested in the most complete manner consistent with the circumstances. In cases of necessity, however, it may be proved by parol evidence. As to the other cases in which secondary or hearsay evidence is admissible, see EVIDENCE.

DECLARATION IN CRIMINAL PROCEEDINGS, in Scottish Law; statement made by the prisoner before the magistrate: see STATEMENT.

DECLARATION OF INDEPENDENCE, MECKLENBURGH: see MECKLENBURGH DECLARATION, ETC.

DECLARATION OF INDEPENDENCE OF THE UNITED STATES OF AMERICA: adopted in the colonial congress 1776, July 4, and subsequently ratified by each of the colonies. It is not probable that at the beginning of the struggle with Great Britain any considerable number of Americans regarded the independence of the colonies as an ultimate result. True, the people of N. C. in their Mecklenburgh convention, 1775, May 20, declared themselves for ever free of all allegiance to the British crown; but that this action did not meet with favor elsewhere is shown by the facts, that Washington abhorred the idea even after assuming command of the army, that it was

emphatically disavowed by congress 1775, July 6, and that prior to 1776, Jan., several colonies formally instructed their delegates in congress to oppose any separatist proposition. The battle of Bunker Hill did much to advance the idea of independence in the New England colonies, and the transfer of the war to the south in 1776, May and June, quickened its popularity in that section. The first step in the great movement was taken by Mass. in 1776, Jan., when her delegates in congress were specially charged to vote for independence. S. C. followed in Mar., Ga. and N. C. in Apr., Va. in May, N. H., N. J., and Md. in June, while N. Y. and Penn., still trusting in the possibility of reconciliation left their delegates uninstructed. The second step was taken by Va. 1776, May, when her delegates were instructed to propose a resolution declaratory of independence, which was done by Richard Henry Lee, June 7, who moved that 'these united colonies are, and of right ought to be, free and independent states, ... and that a plan of confederation be prepared and transmitted to the respective colonies for their consideration and approbation.' Lee's resolution was debated in committee of the whole June 8 and 10, and adopted June 11. Under it one committee was appointed to prepare a Declaration of Independence, consisting of Thomas Jefferson of Va., John Adams of Mass., Benjamin Franklin of Penn., Roger Sherman of Conn., and Robert R. Livingston of N. Y., and another to prepare articles of confederation. The committee on declaration reported a document in the handwriting of its chairman, Thomas Jefferson, June 28; the report was taken up July 1 and debated till the evening of the 4th, when it was adopted without opposition, the N. Y. delegation, though favoring it, refusing to vote from want of instructions. Copies of the declaration were sent to all the colonies, and each ratified it in special convention; N. Y. accepting it July 9, though her delegates did not sign it till the 15th, and N. H. delaying the final signature till Nov. 4. The Declaration of Independence was adopted in the second continental congress, held in the old Penn. state house, Philadelphia, by virtue of a recommendation of the first congress that a second should be convened 1775, May 10.

DECLARATION OF PARIS, concerning Maritime Law in time of war: see INTERNATIONAL LAW.

DECLARATION OF RIGHTS: see RIGHTS.

DECLARE, v. *dĕ-klär* [F. *déclarer*—from L. *declarārĕ*, to make evident—from *de*, in the sense of 'fully;' *clarus*, clear—*lit.*, to make quite clear]: to make known; to tell explicitly and plainly; to assert or affirm; to decide in favor of or against; to make one's opinions, line of conduct, or party known. DECLA'RING, imp. DECLA'RABLE, a. *-ră-bl*, capable of being declared. DECLARED', pp. *-klärd'*. DECLA'RER, n. *-rĕr*, one who. DECLA'REDLY, *-rĕd-lĭ*. DECLARATION, n. *dĕk'lă-rā'shŭn* [F.—L.]: an open expression of facts, opinions, etc.; a statement given verbally, or re-

duced to writing; proclamation. DECLARATIVE, a. *dĕ-klâr'-ă-tĭv*, explanatory. DECLARATOR, *dĕ-clăr'ă-tẽr* [L. *declārātor*, one who declares or makes known]: in *Scots law*, a form of action in the court of session, to assert some right or interest. DECLARATORY, a. *dĕ-klâr'ă-tẽr-ĭ*, making clear or manifest. DE-CLAR'ATORILY, ad. *-lî*. SYN. of 'declare': to announce; proclaim; publish; assert; affirm; avow.

DECLENSION, n. *dĕ-klĕn'shŭn* [L. *declĭnātĭōnem*, a turning aside, a departure: F. *déclinaison* (see DECLINE)]: a falling or declining toward a worse state; decay; in *gram.*, the variation or change in the termination of a noun, an adjective, or a pronoun, to form its cases How the words Declension [Lat. *declinatio*, a declining, or leaning away] and Case [Lat. *casus*, a fall] came to be applied to this species of inflection, has never been made clear. The relations in which one thing stands to other things may be expressed in either of two ways Some languages make use of separate words, called prepositions; in others, the relations are expressed by changes in the termination of the name of the thing. Thus, in Latin, *reg* being the root or crude form of the word for 'king,' *regs*, or *rex*, is the word in the nominative case, signifying 'a king' as subject or agent; *regis*, in the genitive case, 'of a king;' *regi*, in the dative, 'to a king,' etc. An adjective joined to a noun, usually takes a corresponding change. The number of the cases is different in different languages. The further we go back in the history of the Indo-European languages, the richer do we find them in these modifications. Sanskrit had eight cases, Latin six, and Greek five. The names of the Latin cases, often used in regard to the English language also, are—the Nominative, which names the subject or actor; the Genitive, expressing the source whence something proceeds, or to which it belongs; the Dative, that to which something is given, or for which it is done; the Accusative, the object toward which an action is directed; the Vocative, the person addressed or called; and the Ablative, that from which something is taken. The Greek has no Ablative case. The Sanskrit, in addition to the Latin cases, has an Instrumental case, and a Locative case. The grammar of the inflecting languages is complicated by the circumstance, that not all nouns form their cases in the same way. This makes it necessary to distribute nouns into various classes, called 'declensions.' In Latin, five declensions are usually given. As we descend the stream of time, the case-endings become rubbed off, as it were, and prepositions are used in their stead. The languages descended from the Latin (French, Italian, etc.) have lost all the cases of nouns and adjectives. The Gothic languages, of which Anglo-Saxon is one, had cases almost as numerous and perplexing as those of the Latin. German is still to a great extent encumbered with them. English has in nouns only one case different from the nominative—namely, the genitive, or possessive: see NOUN. The declension of Pronouns (q.v.) has been more persistent than that of nouns and adjectives. Languages

of the agglutinating order have, in general, a great abundance of cases. In Finnish, nouns have 15 cases. Thus, *karhu*, a bear; *karhun*, of a bear; *karhuna*, as a bear; *karhutta*, without bear; *karhussa*, in the bear; *karhusta*, out of the bear, etc. In the Magyar, 20 cases may be reckoned; and the languages of the N. American Indians are richer still—perhaps we should say, more embarrassed. For the origin of case endings and other inflectional terminations, and for the comparative merits of the highly inflected and the analytic languages, see INFLECTION.

DECLIEUXIA, n. *dă-klĭ-uks′ĭ-a* [named after M. *Declieux*, a French gardener]: genus of plants belonging to the order *Cinchonaceæ*, and consisting chiefly of shrubs, rarely herbs.

DECLINA′TION, in Astronomy: variation from a fixed line or point. If a great circle be drawn through the pole of the heavens and any star, then the declination of the star is the portion of the circle intercepted between the star and the equator, or the angular distance of the star from the equinoctial: see POLE. The place of a point in the heavens is determined by its right ascension and declination, just as a point in the earth's surface is determined by its latitude and longitude.

DECLINATION NEEDLE, or DECLINOM′ETER: instrument for determining the magnetic declination of the needle of a compass. When a magnetic needle is suspended or made to rest on a point so as to be free to move in a horizontal plane, it finds its position of rest in a line joining two fixed points on the horizon; and when made to leave that position after several oscillations, it returns to it again. At certain places on the earth's surface, these two points are the n. and s. points of the horizon; but in most places, though near, they do not coincide with these. A vertical plane passing through the points on the horizon

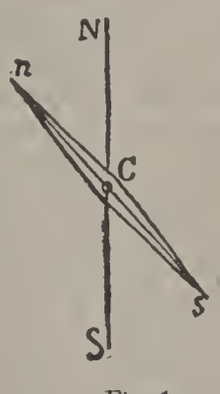


Fig. 1.

Fig. 2

indicated by the needle, is called the magnetic meridian, in the same way that a similar plane, passing through the n. and s. points, is known as the astronomical meridian of the place. The angle between the magnetic and astronomical meridians is termed the declination or variation of the needle. Thus, if NS (Fig. 1) be the line of the astronomical meridian, and *ns* the line joining the poles of the

needle, the angle NC*n* is the declination. The declination is e. or w. according as the magnetic north lies e. or w. of the true north. In the instrument for measuring the magnetic declination of the needle, there are two things essential—the means of ascertaining the astronomical meridian, and a needle for showing the magnetic meridian Fig. 3 represents a common form of the declinometer. Upon a tripod provided with levelling screws stands the pillar P, to which is fixed the graduated azimuthal circle CC. The compass-box B, with the vernier V, attached to it, moves on the azimuthal circle by means of a pivot at the pillar P. Two uprights, U, U, are fixed to the side of the compass-box, on the tops of which rests the axis of the telescope T.

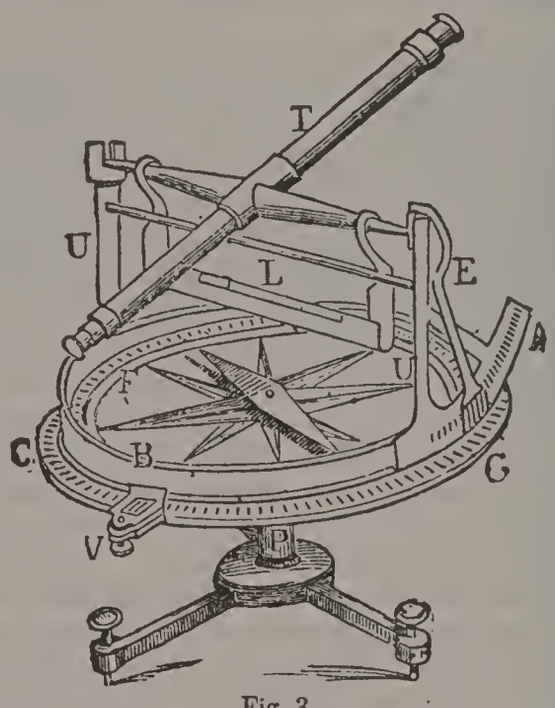


Fig. 3.

A graduated arc A, is fixed to the bottom of one of the uprights, and the angle of elevation of the telescope is marked by the vernier on the arm E, attached to the axis of the telescope. A level L, is also hung on the axis of the telescope, for adjusting the instrument. Inside the compass-box is another graduated circle F, the line joining the zero-points of which is parallel to the axis of the telescope. All the fittings are in brass or copper, iron, of course, being unsuitable. It will be easily seen that the compass-box and telescope move round as one piece on an axis passing through the centre of the azimuthal circle. When an observation is made, the telescope is pointed to a star whose position with regard to the astronomical meridian is known at the time of observation. The telescope with the compass-box is then brought the proper number of degrees on the azimuthal circle, until its axis is in the meridian of the place. If, when the telescope is in this position, the n. end of the needle stand at the zero-point of the inner circle, the declination would be 0°; but if it stand e, or w. of this point, the declination is shown by the degree at which

the needle stands. It is difficult to construct a needle so that the line joining its poles exactly coincides with the line joining its visible extremities. If this coincidence be not perfect, the geometrical axis of the needle according to which the reading is made lies to the right or left of the magnetic axis, and consequently of the true reading. To remedy this, the needle is so made that it can rest either on its lower or upper surface. In finding the true reading, the position of the needle is marked, and then it is turned upside down, and again marked, the mean of the two readings giving the true one. This is seen in fig. 2. The declination of the needle may be ascertained also by the 'Dipping Needle' (q.v.). The ordinary compass which must be used by making allowance for declination, is a declination compass. See MAGNETISM.

DECLINE, v. *dĕ-klīn'* [F. *décliner*—from L. *declĭnārĕ*, to turn aside, to inflect—from *de*, *clino*, I lean: It. *declinare*]: to lean from a right line; to refuse; to shun; to avoid; not to comply; to decay; to droop; to tend to a less perfect state; to sink; to diminish; to fall in value; in *gram.*, to mention in order the terminations of a noun, an adjective, or a pronoun; to inflect: N. tendency to a worse state; decay; a falling off; deterioration; consumption. DECLI'NING, imp. ADJ. that takes a downward course; decaying. DECLINED', pp. *klīnd'*. DECLI'NABLE, a. *-nă-bl*, in *gram.*, capable of being declined. DECLIN'ATORY, a. *-klĭn'ă-tĕr-ĭ*, in *law*, claiming exemption from punishment. DECLIN'ATURE, n. *-ă-tūr*, the act of declining or refusing; in *Scotch law*, preliminary plea declining the jurisdiction of the judge, on the ground of his personal interest in the suit, or of the case being beyond his province. DECLINATION, n. *dĕk'lĭ-nā'shŭn*, deviation; falling to a worse state or condition; in *astron.*, a variation from a fixed line or point. DEC'LINA'TOR, n. an instrument used in astronomy and dialling. DECLINOMETER, n, *dĕk'lĭ-nŏm'ĕ-tĕr* [Gr. *metron*, a measure]: an instrument for measuring the declination of the magnetic needle: see DECLINATION NEEDLE. DEC'LINATE, a. *-nāt*, in *bot.*, directed downward from its base. DECLINATION OF THE NEEDLE OF A COMPASS, variation of the needle from the true meridian.

DECLIVITY, n. *dĕ-klĭv'ĭ-tĭ* [F. *déclivi-té*—from mid. L. *declivĭtātem*, a sloping place—from *de*, *clīvus*, a slope]: inclination, or sloping downward; a slope; gradual descent—opposite of *acclivity* DECLIVOUS, a. *dĕ-klī'vŭs*, descending gradually; sloping.

DECOCT, v. *dĕ-kŏkt'* [L. *decoctus*, a boiling down—from *de*, *coctus*, boiled or baked: It. *decotto;* F. *décocte*, a decoction]: to boil down; to prepare by boiling; to extract by boiling. DECOC'TING, imp. DECOC'TED, pp. DECOC'TIBLE, a. *-tĭ-bl.* DECOC'TION, n. *-shŭn* [F —L.]: the extraction of the virtues of any substance by boiling it in water; an extract. DECOC'TIVE, a. *-tĭv*, that may be decocted. DECOC'TURE, n. *-tūr*, an extract obtained from a body by boiling it in water.

DECODON, n. *dĕk'o-dŏn* [Gr. *deka*, ten; *odous, odontos*, a tooth: so called because the calyx has ten teeth]: genus of *Lythraceæ*. *D. verticillata*, the Swamp Loose-strife, is a native of the United States. It has been used as an emmenagogue, It is now placed in the genus *Nesæa*.

DECOLLATE, v. *dĕ-kŏl'lāt* [L. *decollātus*, beheaded—from *de, collum*, the neck]: to sever the neck; to behead. DECOL'LATING, imp. *-lā-tĭng*. DECOL'LATED, pp. *-lā-tĕd:* ADJ. taken off by the neck; in *zool.*, applied to univalve shells whose apex falls off in the course of growth. DECOLLATION, *dĕk'ŏl-lā'shŭn* [F.—from mid. L.]: the act of beheading; state of one beheaded.

DÉCOLLETÉ, a. *dā-kol-le-tā'* [F. *décolleter*, to uncover the neck and shoulders—from *dé, collet*, collar—from L. *collum*, neck]: leaving the neck and shoulders bare; low necked.

DECOLOR, v. *dĕ-kŭl'ẽr* [L. *de*, down or from, and *color*]: to deprive of color; to bleach. DECOL'ORING, imp. DECOL'ORED, pp. *-ẽrd*. DECOL'ORANT, n. *-ẽr-ănt*, a substance that removes color. DECOL'ORA'TION, n. *ā'shŭn*, the loss or absence of color. DECOL'ORIZE, v. *-ẽr-īz*, to deprive of color. DECOL'ORI'ZING, imp. DECOL'ORIZED, pp. *-īzd*. DECOLORING-STYLE, or DISCHARGE-STYLE, a method of calico-printing: see CALICO.

DECOLORIMETER, *dē-kŭl-ẽr-ĭm'ĕt-ẽr:* instrument for determining the power of portions of bone-black or animal charcoal to abstract coloring matter: see BONE-BLACK.

DECOMPOSE, v. *dē'cŏm-pōz'* [L. *de*, from, and *compose:* F. *decomposer*]: to separate the constituent parts of a body; to rot or decay: to resolve into original elements. DE'COMPO'SING, imp. DE'COMPOSED, pp. *-pōzd*. DE'COMPO'SABLE, a. *-ză-bl*, capable of being resolved into original elements. DECOM'POSI'TION, n. *-pō-zish'ŭn* [F.—L.]: the act of reducing a body into its original elements; putrescence; decay; analysis; in *chemistry*, separation of more simple substances from a compound. DECOM'POSITE, a. *-poz-it*, compounded a second time; having a compound base or radical: N. anything decompounded.

DECOMPOSITION, CHEMICAL, is the separation of the constituents of a body from one another, these constituents being obtained either free or in a new state of combination. Limestone, for example, is decomposed into lime and carbonic acid, oxide of mercury into mercury and oxygen, by heat. This is called simple decomposition. Definite organic bodies resemble inorganic in being influenced by similar forces, but the result in their case is somewhat different, arising from their different composition. In the case of an organic body it is possible to convert its constituents at once into their simplest states of combination, but it is also possible to obtain a large number of intermediate compounds by regulating the decomposing action. The process by which such bodies are thus decomposed is styled by chemists compound decomposition.

DECOMPOSITION OF FORCES: see COMPOSITION.

DECOMPOUND, v. *dē'kŏm-pownd'* [L. *de, and compound*]: to compound a second time; to compose of things already compounded: ADJ. in *bot.*, applied to a leaf cut into numerous compound divisions. DE'COMPOUN'DABLE, a. *-dā-bl*, capable of being decompounded.

DECORATE, v. *dĕk'ō-rāt* [L. *decorātus*, adorned: It. *decorare:* F. *décorer*]: to beautify; to adorn; to ornament; to embellish. DEC'ORATING, imp. DEC'ORATED, pp. DEC'ORA'TOR, n. *-tėr*, one who. DECORATION, n. *dĕk'ō-rā'shŭn*, [F.—L.]: ornament; embellishment; the emblem or mark of an order of knighthood or of merit, as a medal, ribbon, or star; anything added that pleases. DEC'ORA'TIVE, a. *-tĭv*, adorning.

DEC'ORATED STYLE of Gothic Architecture: prevalent in various countries in Europe for a period variously estimated at abt. 85-190 years. During the reigns of the three first Edwards, from the latter part of the 13th till nearly the end of the 14th c., Gothic architecture may be said to have been in full bloom in England. It attained perfection somewhat earlier in France and Germany, and somewhat later in Scotland; consequently the buildings on the continent which correspond to what is called the decorative style in England, belong mostly to the beginning, and those in Scotland to the end of the 14th c. The decorated style arose so gradually out of the style which preceded, and merged so gradually into that which followed, that different periods of duration have been assigned to it by different writers. The longest, probably, is that mentioned by Britton, 1272-1461; the shortest by Rickman, 1307-92. In fixing on the middle of the 14th c. as its highest point, however, all are nearly agreed, and the same agreement is shown in recognizing it as the most perfect of the Gothic styles. The decorated was a higher development of the early English style, all the peculiarities of which, both in forms and in adornments, it exhibited in greater perfection and richness; and it is remarkable that in the more elaborately florid style which succeeded it, the degeneracy in sculpture is as perceptible as in architecture. It seems, indeed, that the school of art which we regard as the peculiar production of the middle age, then attained, in all its branches, to a point which admitted no farther progress in that direction. Nor is this remark confined to art, as addressed to the eye; it may be admitted to apply to poetry also for the era above assigned to the decorated style throws it almost entirely within the period of the long life of Chaucer. It is an instance, moreover of the intimate relation between the æsthetic and the general life of a nation, that it was at the same period that the social, political, and religious institutions of mediæval life culminated. Chivalry and feudality were in the fulness of their vigor, and the church had only begun to give employment to the innovating minds of the first reformers. Of all the epithets which have been employed to characterize this style—absolute Gothic, pure

Gothic, complete Gothic, and the like—that of the 'middle pointed,' seems most descriptive; the simple pointed arch, described from an equilateral or obtuse-angled triangle, being retained, but the window being enlarged, divided by mullions into several lights, and the heads filled with tracery. Of this, as of all the other styles of architecture, the most characteristic feature is unquestionably the capitals of the pillars. Of the foliage employed in the decorated capital, Mr. Bloxam remarks, that it 'may generally be distinguished from that of the early English by its not rising from the neck molding with stiff stems, but being carried round the bell in something of a wreath-like form.... It often exhibits much natural freedom; and we frequently find the oak, the ivy, the hazel, the vine, the fern, etc., very beautifully and closely copied from the natural leaves.'

DECORATION DAY: May 30; day of annual commemoration of the fallen soldiers and sailors who fought for the preservation of the Union in the war against secession. The observance is by processions to the graves of the fallen, which are decorated with flowers. Usually there are public meetings with prayer and an oration. In the southern states the slain Confederates are commemorated similarly, but at a date earlier in the season.

DECOROUS, a. *dĕ-kō′rŭs* [L. *decōrus*, fitting, seemly: It. *decoro;* L. *decōrum;* F. *décorum*, decency]: decent; becoming; suitable, as in speech or behavior. DECO′ROUSLY, ad. *-lĭ*. DECO′RUM, n. *-rŭm* [L.]: propriety of speech or behavior; decency. DECO′ROUSNESS, n. propriety of behavior.—SYN. of 'decorum': seemliness; propriety; dignity.

DECORTICATE, v. *dĕ-kŏr′tĭ-kāt* [L. *decortĭcātus*, deprived of the bark—from *de*, *cortex* or *cortĭcem*, bark: F. *décortiquer*]: to strip off bark from; to peel; to husk. DECOR′TICATING, imp. DECOR′TICATED, pp. DE′CORTICA′TION, n. *-kā′shŭn*, the act of stripping off the bark or husk. DECOR′TICATOR, n. *-kā-tẽr*, a process or machine for removing the hull from grain.

DE COS′TA, BENJAMIN FRANKLIN: American clergyman and writer; b. Charlestown, Mass., 1831, July 10, d. New York, 1904, Nov. 4. He entered the ministry of the Episcopal Church and was rector of the Church of St. John the Evangelist in New York 1863-99. In the year last named he became a Roman Catholic. Included in his many publications are *The Pre-Columbian Discovery of America by the Northmen* (1869); *The Moabite Stone* (1870); *The Rector of Roxburgh*, a novel under the pen-name of WILLIAM HICKLING (1873); *Verrazano the Explorer* (1880); and *Whither Goest Thou?* (1902). He became president (1884) of the first branch of the White Cross Society, of which he was the organizer.

DECOUPLÉ, *dĕ-kôp-lā′*, or UNCOUPLED, *ŭn-kŭp′ld*, in Heraldry: severed or disjoined, so that the ends stand at a distance from one another, as a *chevron decouplé*.

DECOY, v. *dĕ-koy′* [properly *duck-coy:* Dut. *koye,* a place in which a flock is penned; *kooi,* a cabin, a cage]: to entrap by any means that may deceive; to lure into a net or snare; to entice: N. anything intended to lead into a snare; anything that may lead into evil, danger, or the power of an enemy; a place for catching wild fowls. DECOY′ING, imp. DECOYED′, pp. *-koyd′*. DECOY-DUCK, a duck employed to lure wild ducks into a decoy; any person employed to lure into danger or the power of an enemy.

DECOY′ING OF CHIL′DREN: included under the crime of stealing human creatures, the *plagium* of the Roman law and of the law of Scotland; severely punished by the legislation of every civilized country. In countries where slavery does not exist, the theft of a human adult is a crime which can scarcely occur. When a free man is wrongously captured or detained, the crime is not theft, but wrongous imprisonment, which will be dealt with by the criminal law as an injury to the public, while at the same time the individual will be entitled to recover damages for the injury which he has personally sustained. The only form in which the crime has been dealt with in modern times is that of child-stealing, for which severe penalty is provided by statute. See KIDNAPPING.

DECREASE, v. *dĕ-krēs′* [OF. *decrois,* an abatement, a decrease—from L. *decrescĕrĕ,* to grow less—from *de, crescĕrĕ,* to grow: It. *decrescere*]: to grow less: to diminish gradually; to become less; to make less; to lower; to abate: N. a becoming less; decay; gradual diminution. DECREAS′ING, imp. DECREASED, pp. *-krēst′*. DECREAS′INGLY, ad. *-lĭ*. DECRESCENT, a. *dĕ-krĕs′sĕnt,* becoming gradually less. DECRESCENCE, n. *dĕ-krĕs′sĕns,* the state of becoming gradually less.

DECREATION, n. *dĕ′krē-ā′shŭn* [L. *de,* down, and *creation*]: the undoing of an act of creation.

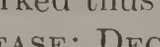
DECREE, n. *dĕ-krē′* [F. *décret*—from L. *decrētum,* a decree—from *de, crētus,* judged: It. *decreto*]: an order or law of an absolute sovereign; an edict or law made by a superior authority; the decision or order of a court; in the *Calvinistic system of theology,* the pre-determined purpose of God (see PREDESTINATION): V. to determine judicially; to fix or appoint; to constitute by edict. DECREE′ING, imp. DECREED′, pp. *-krēd′*. DECREET, n. *dĕ-krēt,* or DECREE, n. *dĕk′rē,* in *Scot.,* a decision or final judgment in a court of law; *decree* in England usually applies to the final judgment of a court of equity. DECRE′TAL. *decrē′tăl,* containing a decree; pertaining to a decree: N. a decree or edict of the pope; a book or code containing decrees of the popes or councils pertaining to one subject: see DECRETALS. DECRE′TIST, n. *-tĭst,* one skilled in the knowledge of the decretals. DECRE′TIVE, a. *-tĭv,* having the force of a decree. DECRETORY, a. *dĕk′rĕ-tēr′ĭ,* judicial; established by a decree. DECREE IN ABSENCE, in *Scotch law,* equivalent to a judgment by default, or to a decree *pro confesso.* DECREE NISI [L. *nisi,* unless]: the first judg-

ment of a superior court, the second being final or absolute *unless* an appeal be made within a limited time: see NISI PRIUS —SYN. of 'decree, n.': proclamation; law; statute; regulation; rule.

DECREMENT, n. *dĕk'rĕ-mĕnt* [L. *deerēmen'tum*, decrease—from *de*, *eresco*, I grow]: decrease; waste *Decrement*, *Deereseent*, and *Decours*, heraldic terms for the wane of the moon: *a moon deereseent* is a half-moon with horns turned to the sinister.

DECREPIT, a. *dĕ-krĕp'ĭt* [F. *déerépit*—from L. *decrepĭtus*, very old—from *de*, *erepĭtus*, rattled, creaked: It. *decrepito—lit.*, unable to make a noise by voice or foot-step]: broken down by the infirmities of age; crippled and enfeebled by age. DECREP'ITUDE, n. *-ĭ-tūd* [F.—L.], or DECREP'ITNESS, n. the feeble state of the body produced by the infirmities of age.

DECREPITATE, v. *dĕ-krĕp'ĭ-tāt* [L. *de*, *erepĭtātus*, rattled much, crackled; It *decrepitare*, to roast salt or other matter till it has ceased to crackle]: to roast or calcine in the fire so as to cause a bursting or crackling noise, as salt; to crackle. DECREP'ITATING, imp. DECREP'ITATED, pp. DECREP'ITA'TION, n. *-tā'shŭn* [F.—L.]: the act of roasting with a continuous crackling noise; the splitting up of crystals on heating, caused by the expansion of the contained moisture; thus when common salt is thrown on a fire, a series of minute explosions occur, due to the water between the plates of the crystalline particles becoming expanded by heat, and ultimately bursting them.

DECRESCENDO, *dē-krĕs-sĕn'do*, in Music: reverse of crescendo; gradual diminishing of the sound. The executing of the decrescendo is difficult, whether on one or more notes. Like the crescendo, it is also frequently combined with a slight ritardando, especially in descending passages. It is frequently marked thus  .

DECRESCENT: see DECREASE: DECREMENT.

DECRETAL, DECRETIVE, DECRETORY, etc.: see under DECREE.

DECRE'TALS: responses by the popes to applications addressed to them as head of the church; the chief source of the canon law. The canon law mostly consists, 1st, of the Decretalium, a collection made by Gratian, Benedictine monk, after the middle of the 12th c., in imitation of the Roman Pandects, and drawn from the opinions of the Fathers, popes, and church-councils; 2d, of the Decretalia, collected by Pope Gregory IX., nearly a century later, from the decretal rescripts or epistles of the popes, as the code of Justinian was from the constitutions of the emperors. To these, additions were made by several succeeding popes: see CANON LAW.

FALSE DECRETALS: famous literary forgeries, spurious papal letters, canons, etc., with a few possibly genuine. They appeared first in the middle of the 9th c.; and were received as true, till their genuineness was questioned by

Cardinal Nicolas de Cusa, 15th c. The proof of their spuriousness is now regarded as clear.

DECRIAL, DECRIER: see under DECRY.

DECROWN, v. *dĕ-krown'* [L. *de*, down, and *crown*]: to deprive of a crown; to discrown.

DECRY, v. *dĕ-krī'* [F. *décrier;* OF. *descrier*, to cry down—from OF. *des* for L. *dis*, the opposite of, and *crier*, to cry (see CRY)]: to cry down; to censure; to clamor against. DECRY'ING, imp. DECRIED', pp. *-krīd'*. DECRI'AL, n. *-krī'ăl*, a clamorous censure. DECRI'ER, n. one who.—SYN. of 'decry': to depreciate; detract; disparage; discredit.

DECUMBENT, a. *dĕ-kŭm'bĕnt* [L. *decumbens* or *decumben'tem*, lying down—from *de*, *cubo* or *cumbo*, I lie]: declined or bending down; in *bot.*, lying flat along the ground, but rising from it near the extremity. DECUM'BENCE, n. *-bĕns*, or DECUM'BENCY, n. *-bĕn-sĭ*, the act or posture of lying down. DECUM'BENTLY, ad *-lĭ*. DECUM'BITURE, n. *-bĭ-tūr*, confinement to a sick-bed; a term used by astrologers to indicate the state of the heavens, by which they pretend to foretell the death or recovery of a sick person.

DECUPLE, n. *dĕk'ū-pl* [F. *décuple*—from L. *decŭplus*, ten times as much—from *decem*, ten; *plico*, I fold: Gr. *dekăplous*]: a number ten times repeated: ADJ. tenfold: V. to make tenfold. DEC'UPLING, imp. *-ū-plĭng*. DEC'UPLED, pp. *-ū-pld*.

DECURION, n. *dĕ-kū'rĭ-ŏn*, or DECURIO [L. *decurĭōnem*]: in the *anc Roman army*, cavalry-officer who commanded ten soldiers. DECURIONES MUNICIPALES, Roman provincial magistrates in free and corporate towns: at first 10 in number, they were in later times much more numerous.

DECURRENT, a. *dĕ-kŭr'rĕnt* [L. *decurren'tem*, running down—from *de*, *currens*, running]: running or extending downward; in *bot.*, attached along the side of a stem below the point of insertion, as the leaves of the thistle. DECUR'RENTLY, ad. *-lĭ*.

DECUSSATE, a. *dĕ-kŭs'sāt* [L. *decussātus*, divided crosswise, as in the form of an X—from *decussis*, the intersection of two lines in the form of a cross: It. *decusse*, the letter X]: in *bot.*, crossing each other in pairs at right angles, as opposite leaves: V. to intersect; to cause to cross, as lines, rays, etc. DECUS'SATING, imp. DECUS'SATED, pp. DECUSSATION, n. *dĕk'ŭs-sā'shŭn*, the act of crossing in the form of an X; in *anatomy*, the crossing of nerve filaments from one side of the body to the other, whence disease of the brain on one side may often induce paralysis on the other side of the body. DECUS'SATIVE, a. *-să-tĭv*, formed as a cross. DECUS'SATIVELY, ad. *-lĭ*.

DEDALOUS, or DEDALIAN: see DAEDALIAN.

DEDENTITION, n. *dē dĕn-tĭsh' ŭn* [L. de, and *dentition*]: the shedding of teeth.

DEDHAM, *dĕd'am*, Mass., town, capital of Norfolk co.; on the Charles river, and the N. Y., N. H. & Hart-

ford R. R. It is one of the oldest towns in the state, the first settlement having been made within its limits as early as 1635. It is noted also as having established the first public school in America supported by a general tax (1644). The manufacturing industries are considerable consisting chiefly of cotton, wool, and clay; but its interests are mainly identified with those of Boston, of which it is practically a suburb. It has a number of public buildings and charitable institutions, among which is a home for fallen women who receive aid from the State and private sources; there is also an institution under the Roman Catholic Sisters of Charity. Pop. (1900) 7,457.

DEDICATE, v. *dĕd'ĭ-kāt* [L. *dedĭcātus*, dedicated, disposed—from *de*, *dĭcātus*, dedicated, devoted: It. *dedicare:* F. *dédier*]: to set apart solemnly for any particular purpose, as for the service of God; to devote to a sacred use; to inscribe or address to, as a book. DED'ICATING, imp. DED'ICATED, pp. DED'ICA'TOR, n. *-ter*, one who. DED'ICA'TION, n. *-kā'shŭn*, the act of setting aside for any particular purpose; an address to a patron or a friend prefixed to a book; anciently very common, probably for winning the favor of the great; happily not now in vogue except in token of affection or admiration. DED'ICA'TORY, a. *-ter-ĭ*, composing or constituting a dedication; complimental.—SYN. of 'dedicate': to devote; consecrate; addict; hallow; set apart; inscribe.

DEDOUBLEMENT, n. *dĕ-dŭb'l-mĕnt* [L. *de*, down: Eng. *double*]: also DEDUPLICATION, n. *dē-dū'plĭ-kā'shŭn* [L. *de*, down: Eng. *duplication*]: the act of doubling down in *bot.*, the separation of a layer from the inner side of a petal, either presenting a peculiar form, or resembling the part from which it is derived; chorisis.

DEDUCE, v. *dĕ-dūs'* [Lat. *dedūcĕrĕ*, to lead or bring away—from *de*, *dūcĕrĕ*, to lead or bring: It. *deducere*]: to draw from in reasoning; to gather a truth or opinion from statements called premises; to infer something from what precedes. DEDU'CING, imp. DEDUCED', pp. *-dūst.* DEDU'CIBLE, a. *-sĭ-bl*, that may be deduced. DEDU'CIBLENESS, n. DEDUCEMENT, n. *-dūs'mĕnt*, the thing deduced; inference. DEDUCT, v. *dĕ-dŭkt'* [*ductus*, led or brought away—from *de*, *ductus*, led]: to subtract or take from. DEDUC'TING, imp. DEDUC'TED, pp. DEDUC'TION, n. *-dŭk'shŭn* [F.—L.]: the act of deducting; that which is deducted; subtraction; abatement; that which is drawn from principles or from a supposed cause by a process of reasoning; inference; consequence or conclusion. DEDUC'TIVE, a. *-tĭv*, that is or may be deduced from premises. DEDUC'TIVELY, ad. *-lĭ.*—SYN. of 'deduce': to derive; infer; trace; conclude; deduct; draw.

DEDUC'TION: particular kind of reasoning or inference. In ordinary language to deduce means to trace one thing to another as its cause, to show that one proposition follows from some other proposition or propositions.

In logic, its signification is more definite. It is usual to oppose Deduction to Induction (q.v.), and to say that the latter consists in reasoning from particulars to generals, the former in reasoning from generals to particulars. In fact, however, every step in a deduction is also an induction. The several steps of a train of deductive reasoning consist of Syllogisms (q.v.), and the major proposition of a syllogism is an induction, or a general proposition expressing the result of a previous induction. The whole object of this kind of reasoning is to show that some particular case or phenomenon really has the marks which bring it under the class to which the general proposition was meant to apply. Thus, the equality of the angles at the base of an isosceles triangle is deduced from the general proposition, 'That magnitudes which can be applied to one another so as to coincide are equal,' by showing that the angles in question can be so applied.

Deduction is opposed more properly to Experiment. Suppose the question to be as to the relation between the spaces and times in falling bodies, the point may be determined in two ways. We may institute experiments, and observe how far bodies *do* fall in different times, and conclude a general proposition from the particular instances observed; or we may bring the case under two general principles already established, those, namely, expressed in the first law of motion, and in the nature of gravity as a moving force, and calculate from these how far bodies *will* or *must* fall in given times. The conclusion or law arrived at in both cases is the same; but in the one case it is experimental, in the other deductive. It is the tendency of all sciences to become more and more deductive. Knowledge put on a deductive basis is sometimes spoken of as science, *par excellence*, and the immediate results of observation as empiricism. Mathematics is essentially a deductive science, and most of the truths in natural philosophy have been gradually put on similar grounds. Chemistry remains almost wholly experimental; it can predict or deduce little or nothing regarding an untried case, except, perhaps, the proportion in which two bodies will combine. See Induction; also A Priori and A Posteriori.

DEE: river in England, draining parts of the shires of Merioneth, Denbigh, Flint, and Salop, in Wales, and the west of Cheshire. Near Trevor, it is crossed by the Ellesmere Canal, on an aqueduct 1,007 ft. long and 120 high; also by the stone viaduct of the Chester and Shrewsbury railway, of 19 arches, each 90 ft. span and 150 ft. high. Below Trevor, the Dee winds first s.e., and then n.e. and n. to Chester, which city it nearly encircles. At Chester, it is 100 yards broad, and runs alongside marshes in an artificial tidal canal 9 m. long, and admitting ships of 600 tons It ends its course of 80 m. in the Irish Sea, in a tidal estuary 9 m. long, 3 to 6 m. broad, forming at high water a noble arm of the sea; but at low water a dreary waste of sand and ooze, with the river flowing through it in a narrow stream. Its chief tributaries are the Tre-

veryn, Alwen, Ceirog, Clyweddog, and Alyn. Its upper basin consists chiefly of Silurian strata, and its lower of new red sandstone. Canals connect the Dee with the rivers of central England The ancient Britons held its waters sacred.

DEE, *dē:* river in Scotland; the larger of the two of that name. It rises in five wells 4,000 ft. above the sea, near the top of Braeriach Mountain, in the neighborhood of Cairntoul and Ben Macdhui, 25 m n w. of Castleton of Braemar. After flowing 12 m. s s.e., it joins the Geauley, at the height of 1,294 ft. above the sea. It then tumbles through a narrow chasm in the gneiss rock, called the Linn of Dee, across which a person can leap. After this it flows e.n.e. through Aberdeenshire and a small part of Kincardineshire, and ends in the German Ocean at the harbor of Aberdeen. In this course, 96 m. in all, it receives a number of tributaries—the Lui, Muic, Feugh, etc. The basin of the Dee, about 1,000 sq. m., consists of granite and gneiss in nearly equal areas. In the gneiss occur many beds of primitive limestone, and some masses of trap-rock and serpentine. On the Dee are Balmoral Castle and several villages much resorted to in summer —Castleton of Braemar, Ballater, Aboyne, Kincardine O'Neil, Banchory-Ternan, and Cults. The soil on the Dee is light and sandy, and requires much rain. A railway extends up Deeside 43 m., from Aberdeen to Ballater. See Balmoral: Braemar.

DEE: river in Scotland; smaller of the two of that name. It rises in Kirkcudbrightshire, near the n. boundary of that country. Its general direction for the first 40 m. is s.e., after which it flows w. to the Solway Firth, into which it falls at Kirkcudbright Bay. The Dee near the centre of Kirkcudbright expands to about the average breath of a quarter of a mile, continuing thus for about 10 m., and forming successively Loch Ken, Dee, and Long Loch. It is about 50 m. in length, navigable for the last 7 miles. The waters of the Dee are noted for their salmon, which are of darker hue, and fatter than those of most rivers in the south of Scotland.

DEE, John: astrologer and mathematician: 1527, July 13—1608; b London; son of Rowland Dee, 'gentleman-sewer' to Henry VIII. He was educated at St. John's College, Cambridge. After residing for some time at the Univ. of Louvain, he went, 1550, to Paris, where, at the College of Rheims, he read lectures on the *Elements* of Euclid. In 1551, he returned to England, was presented by Cecil to Edward VI., and pensioned; but during the reign of 'Bloody Mary' he nearly lost his life. He again set out for the continent, 1564, ostensibly for the purpose of presenting to the emperor Maximilian a book which he had previously dedicated to him. Lilly, however, in his *Memoirs* (p. 224), affirms that he acted as Queen Elizabeth's 'intelligencer' or spy, and this theory is probably true. Lilly says that he was 'a ready-witted man, quick

of apprehension. . . . and excellent in all kinds of learning;' while the professional mask which he wore, the pretensions of being able to raise and converse with spirits, served to prevent suspicion.

The impression that Dee had dealings with the devil seems to have become more prevalent the longer he lived. In 1576, a mob assembled around Mortlake, his country residence, and, attacking the house, broke his instruments, and destroyed his library, which was large and costly, Dee and his family escaping with difficulty.

In the year 1581, having taken into his service an apothecary of the name of Kelly as assistant, Dee visited various continental courts, pretending to be able to raise spirits. Whether he took to this strange profession through a sincere belief in what he professed, or adopted it merely as a blind, a pretext for visiting foreign courts at which he had more serious business to transact, it is impossible to say. In 1595, he was appointed warden of Manchester College, where he resided nine years, and whence he returned to Mortlake. He died very poor. Dee's writings are very numerous; they are chiefly scientific treatises, and many of them are still in manuscript in the Cottonian and other collections. In 1842, the Cambridge Soc. published the Private Diary of Dr. John Dee, with a catalogue of his library of scientific MSS. made by himself.

DEED, n. *dēd* [AS. *dæd;* Goth. *ded;* Ger. that, a thing done: Dut. *daad;* Icel. *dath,* a deed]: anything done; an action; an exploit; power of doing; a writing containing some contract or agreement, especially regarding the sale of real property. DEED'LESS, a. without action or exploits. IN DEED, in fact. IN VERY DEED, in very fact; in reality.

DEED, in Law: formal written expression of something done by the party or parties from whom it proceeds; including almost every form of legal writing: see INDENTURE: CHARTER: WILL: DISPOSITION. As to the manner in which deeds are executed, see SIGNING, SEALING, AND DELIVERY: for Scotland, see TESTING CLAUSE. WITNESS, HOLOGRAPH: REGISTRATION OF DEEDS AND WRITS.

DEEM, v. *dēm* [AS. *dom,* judgment—from *deman,* to form a judgment: Lith. *duma,* mind, thought: Dut. doemen, to doom: Icel. *dœma,* to honor, to judge]: to be of opinion; to think; to judge; to conclude; N. in *OE.,* judgment; opinion. DEEM'ING, imp. DEEMED, pp. *dēmd.* DEEM'STER, n. *-stėr,* or DEMSTER, or DEMPSTER, or DOOMSTER, officer formerly attached to the high court of justiciary in Scotland, who pronounced the doom or sentence of condemned persons. The office was held with that of executioner At the conclusion of a trial, this official was produced in open court, in presence of the criminal: see tale of *Old Mortality,* and notes to that work, and to *Heart of Midlothian.* The office has been long abolished. In the Isle of Man, and the Channel Islands, deemster is a kind of judge.

DEEMS, *dēmz*, CHARLES FORCE, D.D., LL.D.: 1820, Dec. 4—1893, Nov. 18; b. Baltimore, Md.: author. He graduated at Dickinson College, Penn., 1839; entered the ministry of the Meth. Episc. Church; became prof of logic and rhetoric in the Univ. of N. C. 1841, and of natural science in Randolph-Macon College, Va., 1846; resigned the latter office to become pres. of Greensboro Female College, N. C., 1846; and returned to pastoral work 1852. In 1858, he was a second time elected a delegate to the general conference of the Meth. Episc. Church; 1860, spent six months in European travel; and 1860-65, was presiding elder in the Wilmington and Newbern dist., N C. He removed to New York 1865, engaged in literary work, became pres. of Rutgers Female College, and established the Church of the Strangers 1868. In 1870 Cornelius Vanderbilt bought the building of the Mercer Street Presb. church, and presented it to Dr. Deems and a board of trustees for the use of the congregation. Dr. Deems edited *Frank Leslie's Sunday Magazine*, and 5 vols. of the *Southern Methodist Pulpit*, compiled 3 vols. of *Annals of Southern Methodism*, 1882-93 was editor of *Christian Thought*, the monthly magazine published by the Institute of Christian Philosophy, of which he was one of the founders, and pres. 1881-93; published many volumes of sermons and addresses, and contributed largely to periodical literature; and was the author of *Triumph of Peace, and Other Poems* (1840), *Life of Rev. Dr. Clarke* (1840), *Devotional Melodies* (1842), *Twelve College Sermons* (1844), *The Home Altar* (1850), *What Now?* (1853), *The Light of the Nations* (1868), *Weights and Wings* (1874)' and *A Scotch Verdict in Re-Evolution* (1886). He received the degree D.D. from Randolph-Macon College 1850, and LL.D. from the Univ. of N. C. 1877.

DEEN, or DIN, n. *dēn* [Ar. *dīn*]: in *India*, faith; religion; used as a Mohammedan war-cry to rally the faithful.

DEEP, a. *dēp* [Goth. *diups;* Icel. *diupr;* Dut. *diep*, deep; Dut. *dompen*, to plunge under water]: being far below the surface; extending far downward; low in situation, as a valley; not shallow; hidden; secret; penetrating; artful; insidious; grave in sound; low; solemn; profound; sagacious; abstruse; thick; dark-colored; profoundly quiet; depressed; sunk low; heartfelt; affecting: AD. for *deeply:* N. the sea; the ocean; that which is not easily fathomed. DEEPER, ad. more deeply, as drink deeper. DEEP'LY, ad. *-lĭ*, to a great depth; not superficially; profoundly; with great sadness; sorrowfully; in a great or high degree. DEEP'NESS, n. remoteness from the surface downward. DEEPEN, v. *dēp'n*, to make deep; to sink lower; to make darker; to make more distressing or sad; to increase; to become deeper. DEEPENING, imp. *dēp'nĭng*. DEEPENED, pp. *dēp'nd*. DEEP-MOUTHED, having a loud hollow voice. DEEP-READ, not superficial; profoundly versed. DEEP-TONED, having a very low tone. DEEP

OF NIGHT, in *OE.*, in the stillness of night far advanced; midnight; dead of night.

DEEP BOTTOM, BATTLES NEAR: contests in the vicinity of Richmond during the civil war. Deep Bottom, a hamlet in Henrico co., Va., on the n. side of the James river, opposite Jones' Neck, 12 m. by land and 20 m. by water below the Confederate capital, was considered a most stragetic point by both armies, and was several times occupied by each. In close proximity is Malvern Hill, to which Gen. McClellan retreated after his defeat at Gaines's Mills and where he was attacked by Gen. Lee, 1862, July 1. The battle opened at 3 o'clock P. M. and was stubbornly fought by both sides till darkness ended it with a Confederate defeat and loss of 10,000 men. This action was the last of Gen. McClellan's seven days' battles, in which he lost 20,000 men and large quantities of artillery, arms, and stores, but was not followed up to advantage. In 1864, June, Gen. Butler occupied Deep Bottom, laid a pontoon bridge across the river, and repulsed an attack by a part of Gen. Lee's army. When Gen. Grant started on his Sep. movement against Richmond and Petersburg, to prevent Gen. Lee from detaching troops for service elsewhere, Gen. Butler was ordered to make an advance upon the works at Deep Bottom. Fort Harrison, the strongest work n. of the James, was captured with 15 guns and several hundred prisoners Sep. 29; and on the following day the Confederates made three attempts to retake it by assault, but were repelled each time with considerable loss. Gen. Grant, on August 12, ordered another movement on the north side of the James to threaten Richmond. On the 16th the Union army advanced against the Confederate line near Fussell's Mill, and, after a severe fight, carried it, taking three colors and between 200 and 300 prisoners; but the Confederates soon rallied, and retook their works. Soon after noon the Confederate cavalry, supported by infantry, advanced on the Federals, slowly driving them back to Deep Creek, and later in the day across it. There was a cessation of hostilities on the 17th. On the 18th the Confederates advanced from their works above Fussell's Mill and attacked the Union army but were repulsed. On the night of the 20th the Union troops were withdrawn and returned to their positions in front of Petersburg and at Bermuda Hundred.

DEEP RIVER: tributary of the Cape Fear river, N. C.; called by the Indians Sapponah; rises in Guilford co., flows s.e. through Randolph co., e. through Chatham co., and with the Haw forms the Cape Fear river at Haywood, Chatham co.; length 100-130 m.; navigable from its mouth to the coal mines. Along its banks are a number of bituminous semi-bituminous, and anthracite coal fields, the whole supposed to have an area of 40 sq. m., and a productive capacity of 240,000,000 tons. Considerable deposits of copper and iron have been discovered near its banks in Chatham co.

DEEP-SEA LIFE.

DEEP-SEA LIFE: the marine forms inhabiting the lowest depths of the ocean; it is difficult to draw the line exactly between deep-sea life and that of the shallower waters, owing to the various depths in which certain species live. The Challenger Expedition selected as defining the deep-sea fauna, a depth of 100 fathoms, others have taken 500 fathoms as marking its upper boundary, and still others a depth of 1,000 fathoms. The 100-fathom depth to which light penetrates has been termed the littoral region, and within this grow marine algæ, and the animals that feed upon them. The depths below 1,000 fathoms have been termed the benthal area, while the area between 100 and 1,000 fathoms has been termed the abyssal area. A knowledge of this life is only obtainable by means of apparatus which will bring to the surface specimens from these great depths. The chief of these instruments, aside from the sounding lead which is very inadequate for this purpose, are dredges, tangles, and trawls, of which various patterns have been devised.

Owing to faulty observations and to a belief that life could not exist in the greater depths of the ocean on account of the great pressure and the absence of light it was long thought that animals were not to be found at depths greater than 500 fathoms. This view disregarded the fact that Ross and Sabine, 1829, claimed to have obtained living animals from a depth of about 2,000 fathoms in Baffin Bay. Little by little evidence from sounding lines and submarine cables was accumulated which tended to overthrow this belief, but its complete disproval was accomplished by the dredgings of the United States Coast Survey in the Strait of Florida, 1867, when animals were found to be abundant at a depth of 700 fathoms. This was followed, 1869, by the expedition of the English ship Porcupine, which made successful casts of the dredge in 2,435 fathoms of water. Since that time numerous deep-sea dredgings have been conducted by the various governments, the most noticeable being the cruises of the English ship Challenger, the American Blake and Albatross, the French Travailleur and Talisman, the Russian Minineh, the Swedish Vanadis, the Dutch Barents Expedition, the German Tiefsee Expedition, and the explorations of the Prince of Monaco. The results of all these go to show that life, even of highly organized types, occurs in the greatest depths of the ocean.

Both the number and variety of fish decrease as depths increase, as the vast body of marine animals prefer to live near the surface. The majority of the abyssal forms probably live on the surface ooze of the bottom and the minute organisms occurring in it, while these forms are in turn preyed upon by larger rapacious forms A prominent feature of these is the frequent occurrence of phosphorescent organs which probably serve as a lure. Some are blind, some are provided with very large eyes, and it seems certain that all the light in the greater depths of the sea is produced by the phosphorescent organs. An-

other feature is the large size of some of the individuals. Thus while the shallow water species of the hydroid *Monocaulus* reach a length of but two or three inches, the deep-sea form is three feet long. Plants are extremely rare and include only a few minute and inconspicuous forms. Even the lower *Algæ* (seaweeds) so common in shallower waters are lacking. Among the sponges the so-called glass sponges (*Hexactinellidæ*) are most abundant, some of the species being enormous (3 or 4 feet in diameter). The *Cœlenterata* are represented by the giant *Monocaulus*, already mentioned, and by a few jellyfish, and corals. All groups of Echinoderms occur, most noticeable being the comparatively large number of crinoids and of holothurians, many of which are strange in structure and bizarre in outline. The *Arthropoda* consists largely of prawns, schizopods and isopods, some of the latter being gigantic in size, and the strange sea spiders (Pycnogonids), some having slender legs extending a foot or more from the body. Crabs are rare, as are also annelids and molluscs, while a few brachiopods (and these not of the oldest types) occur. Possibly the most interesting are the fishes. Many of these are noticeable for their strange shapes, and especially for the long and slender teeth, and the distensible stomachs Thus the *Chiasmodon niger*, the black swallower, has been taken with a fish, actually larger than itself, coiled up in its stomach On the other hand, *Eurypharynx* and *Gastrostomus*, the pelican fishes, are eel-like forms with enormous mouths and with a trunk not as long as the lower jaw. These lack teeth and are supposed to live not upon other fishes but upon minute forms which they collect in their enormous scoop net. *Ipnops* lacks eyes but has nearly the whole top of the head converted into a pair of phosphorescent organs, while in the *Ceratiidæ* the head frequently bears tentacles with phosphorescent organs at their tips. The ribbon fishes (*Regalecus*), which are occasionally found floating, exhausted or dead, at the surface of all the seas, are presumably deep-sea forms, although none have been drawn up in the trawl. As the common name indicates they are band-like in appearance, and since specimens have been taken measuring over 24 feet long it is possible that these or larger specimens may form part of the basis of sea-serpent stories.

Two factors render life possible in the greater depths of the sea. The constant currents descending from the surface in the polar regions to the bottom and thence to the equatorial regions bring with them the necessary oxygen, although the amount of this gas present in the greatest depths is much less than at the surface. The other factor, that of food, is, in the last analysis, furnished by the constant death of surface (pelagic) forms, whose dead bodies, slowly sinking through the water, furnish the nourishment needed by the simple abyssal animals, which in turn are preyed upon by those more highly organized. Consult the reports of the Challenger Expedition; Agassiz, *Three Cruises of the Blake;* Moseley, *Notes of a Naturalist;* Tanner, *Deep-Sea Exploration;* Thompson, *Voyage of the Challenger.*

DEER, n. sing. or plu. *dēr* [AS. *deor;* Goth. *diurs;* Icel. *dyr;* Ger. *thier*, a beast, an animal—a sense which the English *deer* anciently had: Gr. *thēr*, a wild beast—*lit.*, a wild animal, deer meant originally wild-beast, then game in general, lastly a particular species of game]: a ruminant quadruped with large branching horns, of several species. —their flesh is called venison; in *OE.*, an animal of any kind.—DEER denotes a Linnæan genus of ruminant quadrupeds, now constituting the family *Cervidæ*, which some naturalists have divided into a number of genera, while others regard it as forming only one genus, the distinctions between its groups not seeming to them sufficiently marked or important for generic characters. Deer are animals of graceful form, combining much compactness and strength with slenderness of limb and fleetness. They use their powerful horns for weapons of defense, and sometimes of offense; but in general they trust to flight for their safety. They have a long neck, a small head, which they carry high, large ears, and large full eyes. In most of them there is, below each eye, a sac or fold of the skin, sometimes very small, sometimes of considerable size, called the *suborbital sinus*, *lachrymal sinus*, or *tear-pit*, the use of which is not known. Deer have no cutting teeth in the upper, but eight in the lower jaw, the males have usually

two short canines in the upper, but neither sex has any in the lower jaw; the præmolars are three, and the true molars three on each side in each jaw. They are distinguished from all other ruminants by their branching horns (antlers), which in most of the species exist in the male only; they are solid and deciduous, i.e., fall off annually, and are renewed with increase of size, and breadth of palmation, and number of branches, according to the kind, until the animal has reached old age, when the size of the horns begins to diminish on each annual renewal. The size and development of the horns are closely connected with the sexual system, and their annual renewal takes place just in time for the rutting season, when they are much used in fierce combats. Females with diseased ovaries sometimes have horns like those of the male,

The annexed cut represents the horns of the stag at different ages. During the first year there is only a slight

protuberance; the second year is marked by the *brow antler* (1); the third year, by the *bay antler* (2); the fourth by the *tray antler* (3); the fifth, by the *crockets* (4); the sixth, by the *beam antler* (5); whose various parts are termed (A) *crockets*, (B) *tray*, (C) *bay*, (D) *brow*, (E) *pearls*, (F) the *beam of the antler;* beyond the 6th year (6).

The horn of a deer is a continuation of bone from the outer table of the skull, and is at first clothed with a velvet-like covering (the *'velvet'*), continuous with the outer integuments of the head. The velvet is soon rubbed off—the animal appearing impelled by some irritation to rub it against trees or rocks—leaving the horn hard and solid, with traces of the course of the many vessels employed for its production. The growth of the horn is very rapid. When the old horn has been cast, there is a wound which bleeds a little, but is soon skinned over with a fine film, and the new horn almost immediately begins to sprout. Cast-horns are very rarely found in deer-forests, a fact that has never been satisfactorily accounted for. The growth of the horn is attended with much heat, and the blood-vessels which supply the head enlarge in size. The last part of the process is the formation of a rough circle of bony tubercles (the *burr* or *pearl*) at the base of the horn, bearing some proportion to the size of the horn and the age of the animal. It is by the these, as they enlarge, that the nutritive vessels of the 'velvet' are compressed and obliterated. Deer are clothed almost uniformly with hair, longer and thicker in cold than in warm climates. The tail of all the species is short. The horns of some are broadly palmated, those of others are rounded; and importance has been attached in classification to their having or wanting a distinct *snag* or short branch projecting in front from the base of the antler; which is present, e.g., in the stag, fallow-deer, reindeer, and axis, and wanting in the roebuck, elk, and cariacou. The broad palmation of the horns of species inhabiting the coldest climates has been supposed to be intended for turning over the snow in search of food. One of the most beautiful adaptations in nature is a peculiarity of the foot of the reindeer, by which the hoofs separate to a remarkable width, and the greater extent of surface prevents the foot from sinking in soft snow.—Of N American deer, the genus *Cariacus* has small horns curving forward, the prongs curving upward, and includes the Red Deer (*C. Virginianus*), chestnut-red in summer, and the White-tailed Deer (*C. leucurus*), tail white below like that of the Red Deer, but with chin whitish; and the Mule Deer (*C. macrotis*), named from its long ears; the last two western only. The genus *Cervus* has large horns curved backward, the prongs forward; the Wapiti (*C. Canadensis*) is misnamed Elk. Our Moose or True Elk (*Alce alces*) is the var. *Americanus*. The flesh (venison) of most kinds of deer is highly esteemed for the table, and they have long been regarded as among the noblest objects of the chase. Only one species, the reindeer, can be said to have been fully domesticated

and reduced to the service of man; though individuals of many species have been rendered very tame.

See Axis: Cariacou: Elk: Fallow-deer: Muntjak: Reindeer: Rusa: Stag: Wapiti: etc.—The Musk (q.v.) though sometimes called Musk-deer, is not of the deer family.

DEER, or DEIR, *dēr*, Old: village and parish in the n.e. of Aberdeenshire, in the district of Buchan. Here are vestiges of a Cistercian monastery founded about 1219, by William Cumyn, Earl of Buchan, on the site of a church believed to have been planted by St. Columba, and his disciple St. Drostan, about 580. A few mss. which had belonged to the monks of Deir, found their way, after the Reformation, to the Univ. Library at Cambridge; and among them one has been recently discovered by Mr. Bradshaw of Cambridge, which has come to be known among archeologists and philologists as the *Book of Deir*. It contains a copy of the gospels (in the Latin version of St. Jerome) and of the Apostles' Creed, in the handwriting of the 9th c., with a portion of a *Missa de Infirmis*, or 'Communion of the Sick' (containing a Celtic or Gaelic rubric), in a later hand. On the blank leaves at the beginning, in the handwriting of the early part of the 12th c., are a few notes or memorials, in the Celtic or Gaelic language, recording 'How Columcille and Drostan came from Hi to Aberdour, and how Bede the Pict, who was then Maormohr of Buchan, gave them the towns of Aberdour and Deir,' and how succeeding maormohrs, chiefs of clans, kings, and others, added to the immunities and endowments of the church of Deir.

DEER'FIELD, Mass., town, Franklin co.; at the junction of the Deerfield river with the Connecticut, and on the Boston & Maine, and the New York, New Haven & Hartford R. R's, 33 m. n. of Springfield. A settlement was effected in this locality as early as 1670, and that part of the town now known as South Deerfield was formerly called Bloody Brook, from having been the scene of two memorable massacres. The first occurred in the fifth year after the settlement, when Capt. Thomas Lathrop and 76 of his men were massacred by the Indians. Again, in 1703, the village was attacked by a French and Indian force under De Rouville, who burnt the entire town except the church and one house, killed 36 of the inhabitants, and carried away 108 as captives. Thirteen of the latter were massacred near the village and the remainder, including Rev. John Williams and his family, were taken to Canada. In 1706 the survivors were set at liberty, but a daughter of Mr. Williams, having meanwhile married an Indian, remained with his people and by preference adopted their customs. It has a high school and a public library, a soldiers' monument, and at South Deerfield a marble monument commemorative of the Bloody Brook massacres. Pop. (1910) 2,209.

DEER-FORESTS: tracts of country devoted to the use of red deer, or fallow deer, either for sporting or for breed-

ing purposes. Though called 'forests,' trees are very scarce in many of them. The requisites of a Scotch deer-forest are a great extent of quiet ground, high mountain tops and corries, plenty of moorland and pasture. The requisites of an English deer-park, on the other hand, are wood, lawn, with sufficient underwood, rough grass and ferns, in an inclosed and undulating country of rich soil, In Scotland, deer-stalking and driving have largely increased during the 19th c.: Deer-Forests numbered (1812) 5; (1883) 98. The forest of Athole covers nearly 200,000 acres. In England, since 1750, when fox-hunting superseded deer-hunting, deer are kept chiefly for breeding and ornament, though there are several packs of staghounds which hunt the red deer. The Scotch deer-forests are occupied chiefly by English noblemen and others, not the owners. Dissatisfaction is beginning to be expressed concerning the withdrawal of such large areas from tillage and pasturage. See Forest Laws

DEER-GRASS, or Meadow Beauty (*Rhexia*): genus of low perennial herbs, with showy flowers in cymes, and sessile leaves, of order *Melastomaceæ*. *R. Virginica* has the stem square, winged at the angles, and bright purple flowers; it occurs from Mass. to Ill. and s.; *R. mariana*, N. J. to Ky., has round stems; both in sandy swamps. Other species are southern.

DEERMOUSE, or Jumping Mouse (*Meriones*): genus of American rodent quadrupeds allied to mice and to jerboas, and differing from the gerbils of the warm parts of the old world only in the greater length of their hind legs, the nakedness of the tail, and the existence of a very small tooth in front of the molars of the upper jaw. The Deermouse or Jumping Mouse of Canada (*M. Canadensis*), common in that country, and often seen in summer and autumn, is a beautiful agile little creature, of the size of a mouse, with a very long tail, and very long slender hind legs. It is capable of taking leaps of four or five yards. It burrows, and passes the winter in a state of lethargy.—Another species, the Labrador Jumping Mouse (*M. Labradoricus*), inhabits the still more northerly parts of N. America.

DEER-STALKING, *dēr'stawk-ĭng:* art of following the red deer by cautious maneuvering, hiding and stealing upon it, for the purpose of shooting it with a rifle. As practiced in the Highlands of Scotland, it is perhaps unequalled as a sport in fatigue as well as in excitement. The extensive tracts of hill-land over which deer roam, and on which they are stalked, are termed 'deer-forests,' few of which, however, notwithstanding the appellation, can boast of a single tree; and where these 'forests' belong to noblemen and others peculiarly addicted to the sport, deer are strictly preserved, to the almost total exclusion of sheep and cattle. This sport is more highly esteemed, and greater sums are paid for it by its devotees than for any other in Scotland. This arises chiefly from two causes:

1st, from the intense excitement occasioned in the pursuit of the red deer; and 2d, from the comparative scarceness of good forests. Deer-stalking demands many expensive accessories, among which are: deer-hounds, hounds trained to pursue and bring to bay wounded game; one or more guides to accompany the stalker; and hill-men to *drive* the deer, when that method of obtaining shots is determined upon, etc. However excellent a marksman the deer-stalker may be, and though he may be moderately conversant with the general 'lie' and bearings of the ground, he is almost always accompanied by an experienced guide, upon whose cool judgment, keen eye, and thorough knowledge of every knoll and rock of the 'forest,' depends greatly his chance of obtaining a shot. A dress resembling in color as nearly as possible that of the ground to be gone over; a rifle of first-rate make, and previously practiced with at various distances; a deer-hound or more, that watch constantly in perfect silence for the slightest look or sign from their master; a robust constitution, to stand the fatigue of walking, crouching (sometimes in water), crawling, and advancing on the back, feet first, are some of the requisites the deer-stalker must possess. To these must be added unflinching perseverance and untiring patience; and even then, unless the hunter is gifted by nature or experience with *nerve* to take instant and careful advantage of the rare opportunities a day's stalk may offer, his previous care and toil must go for nothing. The deer-stalker should always be provided with a good telescope. The season for killing red deer begins Oct. 20, and closes June 9. This sport depends more upon the vicissitudes of wind and weather than perhaps any other. Deer are gifted with very keen scent, for which the stalker must allow by advancing upon his game *up* the wind. They are also far-sighted, and exceedingly prone to take alarm at the slightest sound, faculties which warn the stalker never to let himself or his attendant be seen, and to observe the strictest silence. Deer, if disturbed, for the most part look for the cause as proceeding from the *low grounds*, and rarely from above; this peculiarity is duly taken advantage of by the sportsman, who accordingly advances upon his game, wind permitting (frequently by the most circuitous and precipitous paths), *down* hill. When thus approaching deer feeding in the valley below, the utmost caution is requisite, both as regards speed and the mode of progression. The stalker must advance inch by inch on his back, by resting himself on his elbows, and drawing himself forward by his heels; he must observe every motion of the deer, stopping when they stop feeding, and retaining his position, irksome though it be, till his game recommence pasturing; he must never, even for an instant, display the slightest unusual motion during his toilsome and stealthy advance, and must submit implicitly to every signal and whisper from his guide. During protracted stalks, especially when the ground between man and deer is free from sheltering knolls, the stalker's patience is tried to the utmost by his having

to pause so frequently in his progress; the stalk, however, is usually directed not so much *directly* toward the deer, as for some intervening knoll or rock where a little relaxation of limb and breathing-time may be obtained, ere firing. Thus, if fortunate in properly winding the deer, and if the stalk has been successfully accomplished, the herd may be reached within 50 or 100 yards. The game may possibly consist of either a single stag, or some hinds and one or two stags; the finest of the latter is usually the aim of the true stalker, and the most deadly spot to aim at is behind the shoulder. If mortally hit, the animal frequently bounds away for 20 or more yards, and then falls dead; if not mortally struck, it will sometimes fall at the shot, and spring up again, and follow the retreating herd. It is then the deer-hound is slipped. When a deer is killed, and cannot be immediately conveyed home, the attendant instantly disembowels it, that the venison may not be tainted. This operation is termed *grallochíng*. The best stag in the herd is that which is the fattest, and has the finest antlers: see DEER. When there are more than one sportsman, or where the peculiarities of the ground are such as to render the task of stalking unusually difficult, hill-men are employed to drive the deer toward certain passes, behind which the shooters are previously concealed. On such occasions, the excitement produced by the gradually approaching and unsuspecting herd, mingled with the grandeur of the whole scene, as they at length rush through the fatal pass, is enough to try the nerves even of the most experienced stalkers. The Black Mount, belonging to the Earl of Breadalbane, and the Forest of Athole, belonging to the Duke of Athole, are the finest deer-forests in Scotland. One of the best works on deer-stalking is Scrope's treatise.

DEESIS, n. *dĕ-ē′sĭs* [Gr. *deēsis*, a supplication]: an invocation; a supplication.

DEFACE, v. *dĕ-fās′* [OF. *desfacer*, to efface, to rase—from F. *des*, and *face*—from L. *dis*, apart, away; *facĭēs*, the face: F. *défaire*, to undo]: to destroy or injure the face or surface of anything; to disfigure; to obliterate or erase. DEFA′CING, imp. DEFACED′, pp. *-fāst′*. DEFA′CER, n. *-sẽr*, one who. DEFACE′MENT, n. *-mĕnt*, injury to the surface of anything. DEFA′CINGLY, ad. *-lĭ*.

DE FACTO, *dē fak′tō* [Lat.]: in fact, in reality; or in possession. One actually reigning is king *de facto;* one who has the right to reign is king *de jure*, or in right and justice. ī

DEFALCATE, v. *dĕ-făl′kāt* [mid. L. *defalcātus*, cut away with the falx, deducted—from L. *de* for *dis*, apart, away; *falx*, a pruning hook: F. *défalquer—lit.*, to cut off as with a pruning-hook]: to take away; to deduct; to abstract a part, used chiefly of money and accounts. DEFAL′CATING, imp. DEFAL′CATED, pp. DEFALCATION, n. *dĕ′făl-kā′shŭn* [F.—L.]: diminution; fraudulent deficiency in money matters; breach of trust, applied to money.

DEFAMA'TION: see LIBEL.

DEFAME, v. *dĕ-fām'* [F. *diffamer*—from OF. *defamer*, to take away one's reputation—from L. *diffamārĕ*, to spread an evil report—from *dif*, asunder; *fama*, fame, repute: It. *diffamare*]: to spread an evil report of; to speak evil of; to slander; to calumniate; to asperse; to vilify. DEFA'MING, imp. DEFAMED', pp. *-fāmd'*. DEFA'MER, n. one who. DEFAMATION, n. *def'ă-mā'shŭn*, the uttering of slanderous words to injure another's reputation: see LIBEL. —DEFAMATORY, a. *dĕ-făm'ă-tĕr-ĭ*, false and injurious to reputation; slanderous. DEFAMINGLY, ad. *dĕ-fā'mĭng-lĭ*.—SYN. of 'defamation': calumny; aspersion; detraction; slander; libel; vilification; reviling.

DEFAULT, n. *dĕ-fawlt* [OF. *deffaut* and *defaulte;* F. *défaut*, defect—from L. *de* for *dis;* It. *falta;* F. *faulte* or *faute*, defect, want]: neglect to do what duty or law requires or permits; a failure; defect; an omission; non-appearance in court at trial of cause; a military offense: V. in *OE.*, to withhold or neglect by default: to offend. DEFAULT'ER, n. *-er*, one guilty of an offense; one who fails to account for money intrusted to his care, particularly public money; a peculator. DEFAULT'ED, a. having defect; called out of court as a defendant. JUDGMENT BY DEFAULT, judgment in favor of plaintiff when defendant has failed to appear or to lodge a sufficient plea, or other pleading, within the prescribed time. Judgment by default is not necessarily final. In case of non-appearance, it will be set aside on the defendant's making affidavit as to the cause of non-appearance, and disclosing a ground of defense on the merits. If judgment have been for want of a plea, etc , it may also in general be set aside on an affidavit of merits. But in both cases, the defendant must bear the costs of the proceedings.

DEFEASIBLE, a. *dĕ-fē'zĭ-bl* [OF. *des* for L. *dis*, apart; F. *faisable*, practicable—from F. *défaire*, to undo—from L. *facĕrĕ*, to make or do]: that may be annulled. DEFEA'SIBLENESS, n. *-bl-nĕs*. DEFEA'SANCE, n. *dĕ-fē'zăns* [Scot. *defaisance*, acquittance from a claim—from F. *defaisance*—from F. *défaire* to undo]: act of rendering null; the preventing of the operation of an instrument; in *OE.*, defeat; conquest. DEFEA'SANCED, a. *-zănst*. DEED OF DEFEASANCE, in *English law*, instrument which defeats the force or operation of some other deed or estate; and that which in the same deed is called a condition, in a separated deed is called a defeasance. Defeasance of the freehold is a collateral deed, owing its origin to restrictions on the conveyance of land imposed by the feudal law. Under that system, every tenant of land was by virtue of his tenancy, vassal under a superior lord, to whom he owed suit and service. The consent of the lord was necessary for every change of vassal; and the law would not recognize a condition whereby, in a particular event, the land should revert to the original tenant, and the over lord be thus forced to change his vassal. Hence, when a holder of land

wished to obtain money on the security of his land, the conveyance to the lender was *ex facie* absolute; but a deed of defeasance was executed, in virtue of which the borrower, on payment of his money, could recover his land. In this manner mortgages were originally effected. In process of time, the practice of inserting conditions in the original conveyance became established, and from that period, deeds of defeasance have ceased to be in general use. For the ancient usage to the same effect in Scotland, see WADSET DISPOSITION: HERITABLE SECURITIES.

There is a deed of defeasance, also of executory interests, which may be made at any time after the creation of the estate to which it refers: it must be with the same formalities as the deeds which created the estate, and between the same parties or their representatives.

DEFEAT, v. *dĕ-fēt'* [F. *défaite*, defeat, check—from *défaire*, to undo—from F. *des* for L. *dis*, apart; L. *facĕrĕ*, to do]: to vanquish or overcome; to frustate; to disappoint; to resist with success; to baffle; in *OE.*, to disguise; to alter: N. an overthrow; loss of battle; prevention of success; frustration; in the *army*, a complete want of success in battle—a *repulse* denotes less than a defeat, and a *rout* more. DEFEAT'ING, imp. DEFEAT'ED, pp. DEFEATURE, n. *dĕ-fē'tūr*, in *OE.*, change in features or countenance.—SYN. of 'defeat, v.': to disconcert; confound; discompose; foil; vanquish; overcome; disperse; overthrow.

DEFECATE, v. *def ĕ-kāt* [L. *defæcātus*, cleansed from the dregs—from *de*, *fæx*, dregs or refuse matter: It. *defecare*]: to cleanse from refuse matter; to purify; to refine: to clear from dregs; to clarify. DEF'ECATING, imp. DEF'ECATED, pp. DEF'ECA'TION, n. *-kā'shŭn*, purification from dregs; act of voiding the bowels.

DEFECT, n. *dĕ-fekt'* [L. *defectus*, a failure, a lack—from *de*, *factus*, made or done]: a failure or deficiency; want of something necessary; fault; an imperfection; blemish; deformity. DEFEC'TION, n. *-fĕk'shŭn* [F.—L.]: a failure of duty; the act of abandoning a person or cause from choice or necessity; revolt; apostasy. DEFEC'TIVE, a. *-tĭv*, imperfect; faulty; wanting in something; deficient. DEFEC'TIVELY, ad. *-lĭ*. DEFEC'TIVENESS, n. the state of being imperfect or faulty. DEFEC'TIBLE, a. *-tĭ-bl*, deficient; wanting. DEFEC'TIBIL'ITY, n. *-bĭl'ĭ-tĭ*, state of failing; deficiency.

DEFEND, v. *dĕ-fĕnd'* [F. *défendre*—from L. *defendĕrĕ*, to ward off or repel: It. *difendere*]: to ward off or repel; to maintain or vindicate by force or argument; to secure against attack; to shelter; to cover; to guard; to resist. DEFEND'ING, imp. DEFEND'ED, pp. DEFEN'DER, n. one who. DEFEN'DABLE, a. *-dă-bl*, that may be defended. DEFEN'DANT, n. one who defends himself against assailants; a person summoned into a court to reply to certain charges. DEFENDER OF THE FAITH, a title of the sovereigns of England, conferred upon King Henry VIII. by Pope Leo X., for writing against Martin Luther, 1521,—the title is said,

however, to have belonged to the sovereigns of England before that time. When the king afterward suppressed the religious houses at the Reformation, the pope not only recalled the title, but deposed him. The title was afterward confirmed by parliament (35 Henry VIII. c. 3), and has ever since been used by British sovereigns The corresponding title in Spain is, Most Catholic, and in France was, Most Christian King. SYN. of 'defend'. to protect; repel; drive back; maintain; uphold; deny; oppose; contest.

DEFENSE, or DEFENCE, n *dĕ-fĕns'* [F. *défense*—from mid. L. *defensa*, a defending—from L *defensus*, warded off or repelled]: anything that protects from danger, injury, or attack; protection; justification; resistance; opposition; reply to demands or charges, as in a court of law; in *OE.*, skill in the art of self-defense, and fencing and boxing. DEFENSE'LESS, a. without means of warding off danger, injury, or assault DEFENSE'LESSLY, ad. *-lĭ.* DEFENSE'LESSNESS, n. DEFENS'SES, n. plu. *-fĕn'sĕz*, in *Scots law*, all the pleas or replies offered for the defender in an action; fortified positions for defense

DEFENSIBLE, a. *dĕ-fĕn'sĭ-bl* [mid. L. *defensib'ĭlis*, defensible—from L *defensus*, warded off or repelled (see DEFENSE)]: that may be defended; that furnishes the means of defense. DEFEN'SIBLY, ad. *-blĭ.* DEFEN'SIBIL'ITY, n. *-bĭl'ĭ-tĭ*, or DEFEN'SIBLENESS, n. *-bl-nĕs*, capability of being defended. DEFEN'SIVE, n. *-sĭv*, that which defends; posture of defense: ADJ. serving to defend; in a posture of defense. DEFEN'SIVELY, ad. *-lĭ.* ON THE DEFENSIVE, said of a force when it takes up a position to receive an attack—when making attacks, the force is acting ON THE OFFENSIVE.

DEFER, v. *dĕ-fĕr'* [F. *différer*, to put off—from L. *differrĕ*, to carry different ways—from *dis*, asunder; *ferre*, to bear or carry: It. *differire—lit.*, to carry different ways]: to put off; to delay. DEFER'RING, imp. DEFERRED', pp. *-fĕrd'.*—SYN of 'defer': to postpone; procrastinate; prolong; protract.

DEFER, v. *dĕ-fĕr'* [F. *déférer*, to confer, to bestow—from L. *de*, *ferrĕ*, to bear or bring: It. *deferire—lit.*, to bear or bring down one's self]: to yield or lean to another's opinion; to submit in opinion. DEFER'RING, imp. DEFERRED', pp. *-fĕrd'*. DEFERENCE, n. *dĕf'ĕr-ĕns* [F]: a yielding in opinion to another; regard; respect; complaisance. DEF'EREN'TIAL, a. *-ĕn'shăl*, expressing deference. DEF'EREN'TIALLY, ad. *-lĭ* DEFER'RER, n. one who.

DEFERENT, *dĕf'ĕr-ĕnt:* old term in astronomy, originating in the Ptolemaic system (q.v.), signifying a circle on which the centre of another circle moves, while a body is supposed to be moving on the latter itself If we suppose the sun to be moving round a centre in space, while the earth moves, say, in a circle round the sun, then the sun is moving in the deferent.

DEFERVESCENCE, n. *def′ėr-vĕs′sĕns* [L. *defervescens*, cooling down—from *de*, *fervĕō*, I am hot]: cessation of ebullition; the act or state of growing cool; loss of heat

DEFFAND, *dā-fŏng′*, Marie de Vichy-Chamroud, Marquise du: 1697–1780, Sep. 24; b. Burgundy: leader in literary and social life. She was of noble birth and Parisian education, naturally beautiful and witty, but became an extreme skeptic in early life. When 20 years old she was married against her will to the Marquis du Deffand, from whom she soon separated, though subseqeuntly reconciled to him for a brief period She opened a grand establishment in Paris, to which her beauty, intelligence, and accomplishments attracted the most prominent literary and philosophical minds of the day, not only of the city and country, but also of many foreign capitals. For many years she was a leading personage at the French court, and led a life of fashionable dissipation. She became blind when 54 years old, and then made her abode in the convent of St. Joseph, where she entertained Choiseul, Boufflers, Montesquieu, Voltaire, D'Alembert, David Hume, and Horace Walpole, till her rival, Mlle. de L'Espinasse, attracted D'Alembert and several others from her. Her correspondence with Walpole extended over 15 years.

DEFIANCE, n. *dĕ-fī′ăns* .[F. *défiance* (see Defy)]: a challenge, as to fight; a calling upon one to make good any assertion or charge; a setting at naught. Defiant, a. *dĕ-fī′ănt*, full of the spirit of bravado; bold; insolent. Bid defiance to, or Set at defiance, to defy.

DEFI′ANCE: town, cap. Defiance co., O.; on the Maumee river at the mouth of the Auglaize; and on the Wabash and the Baltimore, Pittsburg and Chicago railroads, and the Wabash and Erie canal; 44 m e.n.e. of Fort Wayne, 50 m. w.s.w. of Toledo. It is at the head of steamboat navigation on the river, does a large shipping trade in agricultural products, tobacco, and live stock, and contains a co. courthouse, a national bank, public schools, bicycle factories, an iron foundry, a woolen mill, flour mills, and several other manufactories. Pop. (1870) 2,750; (1880) 5,907; (1890) 7,694; (1900) 7,579; (1910) 7,327.

DEFICIENT, a. *dĕ-fĭsh′ĕnt* [L. *deficĭĕns* or *deficĭen′tem*, wanting, failing—from *de*, *facĭō*, I make]: wanting; imperfect; defective Defi′ciently, ad. *-lĭ*. Defi′ciency, n. *-ĕn-sĭ*, imperfection; a falling short. Deficit, n. *dĕf′ĭ-sĭt* [L., it falls short]: want; balance on the wrong side of an account; deficiency, as in taxes or revenue.

DEFI′CIENT NUMBER: one whose aliquot parts ,or factors, added together make a sum less than the number itself: thus, 16, whose parts, 2, 4, 8, make together only 14, is a deficient number

DEFILADE, v *dĕf′ĭ-lād′* [L *de*, down; F *fil*, L. *filum*, a thread]: in *fort.*, to render an enemy's line of fire harmless or less destructive by raising or arranging exposed sides of works. Defilading, imp. *dĕf′ĭ-lā′dĭng:* N. that

part of the art of fortification which consists in determining the directions and heights of the lines of rampart, so that the interior may not be commanded by the fire of any works the enemy may raise. Defilading is divided into horizontal and vertical. The object of the first is to prevent the lines being commanded in the direction of their length, or enfiladed (see ENFILADE); the prolongations of the lines, therefore, must avoid all points where hostile works could be erected. Vertical defilating determines the height of rampart necessary to protect the interior from direct fire DEF'ILA'DED, pp.

DEFILE, v. *dĕ-fīl'* [L. *de*, for AS. *be*, to make, and AS. *fylan;* Dut. *vuylen*, to make foul or filthy: AS. *gefylan*, to pollute: comp. OF. *defouler*, to trample under foot]: to render unclean or dirty; to make impure; to pollute or corrupt; to violate chastity. DEFI'LING, imp. DEFILED', pp. *-fīld'*. DEFI'LER, n. one who. DEFILE'MENT, n. foulness; uncleanness; corruption; impurity.—SYN. of 'defile': to contaminate; taint; befoul; soil; sully; tarnish; vitiate; debauch; violate.

DEFILE, n. *dĕ-fīl'* or *dē'-* [F *défiler*, to go in a string—from OF *des*, F *dé*, L *dis*, apart; F. *fil*, L. *filum*, a thread]: a long narrow pass or gorge between hills through which troops can march only with a narrow front, or one by one: wherever free lateral movement is obstructed, is a defile; and where a defile cannot be avoided except by making a long circuit, it is called a 'pass': V. *dĕ-fīl'*, to cause soldiers marching with a broad front to reduce it to a narrow one; to march off in a line or narrow front, as soldiers. DEFI'LING, imp. DEFILED', pp. *-fīld'*.

DEFINE, v. *dĕ-fīn'* [OF. *définer*, to define, to conclude —from L. *definīrĕ*, to limit—from *de*, *finis*, an end: It. *definire*]: to determine or fix the limits; to explain the exact meaning of a word or term; to explain the distinctive properties, etc., of a thing. DEFI'NING, imp. DEFINED', pp. *-fīnd'*. DEFI'NER, n. one who. DEFI'NABLE, a. *-nă-bl*, that may be limited or explained. DEFI'NABLY, ad. *-blĭ*. DEFINITION, n. *dĕf'ĭ-nĭsh'ŭn* [F.—L.]: a description or explanation; the exact meaning attached to a word or phrase. DEF'INITE, a. *-nĭt* [L. *definītus*, limited, defined]: settled with precision; exact; clear; precise. DEF'INITELY, ad. *-lĭ*. DEF'INITENESS, n. the state of being definite; determinateness. DEFINITIVE, a. *dĕ-fĭn'ĭ-tĭv*, determinate; final. DEFIN'ITIVELY, ad. *-lĭ*, in a definitive manner; decisively; positively DEFIN'ITIVENESS, n.

DEF'INITE PROPOR'TIONS, LAWS OF, in Chemistry: see ATOMIC THEORY.

DEFINITION: enumeration of the attributes of a term; the unfolding of the meaning or connotation of a concept. A complete statement of the attributes of a concept would, however, not only be in most cases a very burdensome and superfluous task, but also frequently be impossible because of the incompleteness of our knowledge. A definition serves its purpose if it state clearly, with reference to the

purpose in hand, the essential or significant features of a concept, and distinguish it sharply from all closely related concepts; thus giving to it its proper place in the body of knowledge. There can be no satisfactory discourse or inference without clearness of definition; on the other hand, definition simply reflects the actual state of knowledge of the person who defines or in the field in which a definition is made. Some logicians distinguish *verbal* or *nominal* and *real* definitions. The nominal definition is said to state simply the meaning of a *word* or *term;* the real definition gives the meaning of the *concept* or *thing* for which a term stands. In truth, however, we are interested in terms only as symbols of *objects of thought,* and every definition represents some object of thought that is real in some connection; e.g., horses and centaurs are both real, the former in the universe of actual perceptual experience, the latter in the universe of Greek mythology, hence a definition of a centaur is for the latter universe a real definition. The distinction between nominal and real definitions assumes that thought may sometimes consist simply in the unfolding or *analysis* of what is already known. This aspect of thinking is often the most prominent one, but real thinking always involves the complementary aspect of *synthesis.*

A definition may be regarded as the construction of a concept out of others better known and having more general import, and the union of which in the definition differentiates the object defined from others cognate to it. In the scholastic phraseology a definition must give the next *genus* and the *differential* of the *species* to be defined; e.g., in the definition, a triangle is a rectilinear figure having three sides,' the species of figure 'triangle' gets its differentiation from other geometrical forms by the union in it of 'rectilinearity' and 'three-sidedness.' Scholastic logic erred in assuming that a good definition employs only one genus. In actual definition several more general concepts are united and specified or limited. Certain rules are laid down for definition. 1. The term defined should be coextensive with the definition; for instance, to define man as a biped animal breaks this rule. 2. Neither the term defined nor any synonym of it should be employed in the definition; to define justice as the way of acting justly is to violate this rule. 3. A definition should not be couched in terms more obscure or ambiguous than the term to be defined. This rule does not preclude the use of technical terms in scientific discourse. 4. A definition should not be in negative terms. Sometimes, however, negative terms must be used, e.g. 'spiritual' is not material, i.e., not made up of parts externally juxtaposed in space.

DEFLAGRATE, v. *dĕf'lă-grāt* [L. *deflagrātum,* to be burned completely—from *de, flāgro,* I burn]: to set fire to; to burn rapidly. DEF'LAGRATING, imp. DEF'LAGRATED, pp. DEF'LAGRABLE, a. *-gră-bl,* having the quality of burning with a sudden combustion. DEF'LAGRABIL'ITY, n. *-bĭl'-*

ĭ-tĭ. DEF'LAGRA'TION, n. *-grā'shŭn*, sudden and violent combustion; e.g., the rapid combustion of ignited charcoal when a nitrate (such as nitrate of potash) or a chlorate (such as chlorate of potash) is thrown thereon. As chlorates do not occur naturally, it follows that deflagration with a natural salt indicates a nitrate; and if the deflagration be accompanied by a violet flame, it is characteristic of nitrate of potash (ordinary nitre or saltpetre); and if by a strong yellow flame, it is indicative of nitrate of soda (cubical nitre). DEF'LAGRA'TOR, n. *-grā'tŏr*, a galvanic battery used for obtaining intense light and heat.

DEFLECT, v. *dĕ-flĕkt'* [L. *deflectĕrĕ*, to bend or turn aside—from *de*, down, away; *flectĕrĕ*, to bend or turn]: to bend from a straight line; to turn aside; to swerve. DEFLEC'TING, imp. DEFLEC'TED, pp. DEFLEC'TION, n. *-flĕk'shŭn*, the act of turning down or aside; change of course or line of motion of a moving body; also, synonymous with Diffraction (q.v.). DEFLEXED', a. *-flĕkst'*, in *bot.*, bent downward in a continuous curve.

DEFLORATE, a. *dĕ-flō'rāt* [mid. L. *deflorātus*, despoiled of—from *de* for *dis; flos*, a flower, *flōris*, of a flower: It. *deflorare:* F. *déflorer*]: having lost its blossoms, as a plant; having shed its pollen. DEFLORATION, n. *dē'flō-rā'shŭn*, the act of taking away a woman's virginity.

DEFLOUR, or DEFLOWER, v. *dĕ-flow'r* [OF. *defleurer*, to defile—from mid. L. *deflorārĕ* for *difflorārĕ*, to gather flowers, to ravish (see DEFLORATE)]: to take away a woman's virginity; to ravish. DEFLOW'ERING, imp. DEFLOW'ERED, pp. *-flow'rd.* DEFLOW'ERER, n. *-flow'rĕr*, one who.

DEFLUXION, n. *dĕ-flŭk'shŭn* [L. *defluxĭōnem*—from *defluxus*, flowed down—from *de*, *fluxus*, flowed]: a discharge or running off of humors from a mucous membrane, especially of the air-passages, as from the nose in a cold: synonymous with Catarrh (q.v.).

DE FOE, *de fo'*, DANIEL: 1661–1731, Apr.; b. London; son of James Foe, a butcher. The prefix De was added to the family name of Foe by our author when he had reached manhood. De Foe, whose father was a dissenter, was educated at a dissenting academy at Newington Green where he remained until he had nearly reached the age of nineteen. In 1682, he began his career as author, publishing a pamphlet which contained strictures upon the clergy of that day. This was followed, 1683, by another pamphlet, entitled *A Treatise against the Turks.* In 1685, he took part in the rebellion of the Duke of Monmouth, but luckily escaped being punished on its suppression. After this he engaged in trade, but a series of misfortunes finally determined him to forsake it.

In 1701, he published his famous satirical poem, *The True-born Englishman*, written in vindication of King William, and in answer to a poem in which he had been attacked, called *The Foreigners.* This poem was a wonderful success; 80,000 'pirated' copies of it were sold on the streets at a very small price. During the same year, when

the deputation that presented the famous petition of the freeholders of Kent to the house of commons were illegally thrown into prison, De Foe drew up, a few days after, a remonstrance, known in history as the *Legion Memorial;* and is said to have himself, in the disguise of a woman, presented it to the speaker as he entered the house. In 1703, a complaint being made in the house of commons regarding one of his recent publications, called *The Shortest Way with Dissenters* (1702), the whole tenor of which seems to have been misunderstood, he was apprehended, tried, found guilty, pilloried, fined, and imprisoned. While in prison, he wrote a *Hymn to the Pillory;* and here also he projected *The Review,* a periodical which he established on his release, 1704, Aug., and continued to conduct for nine years. In 1706, Lord Godolphin, who admired the practical talent and literary vigor of De Foe, employed him as one of the staff of the commissioners to Scotland to bring about the Union. De Foe's knowledge of revenue, trade, and taxes was found of great value; and it is supposed that he was rewarded with a pension for his services on that occasion. His visit to Scotland enabled him to write a *History of the Union.* For some years afterward De Foe seems to have lived in comfortable circumstances, but gradually his numerous political enemies gathered voice again, and De Foe was literally silenced by noise and obloquy; at last, however, roused by the insolence of the Jacobite party, he was once more tempted to write unwarily, and the result was that he was again (1713) apprehended, fined £800, and committed to Newgate. After his release, De Foe turned from politics, and, fortunately for the world, sought rest in the sphere of imaginative literature. In 1719, appeared the famous *Robinson Crusoe*—most popular of all his works. Its success was immediate. The publisher, who had accepted the book after all the others had refused it, is said to have cleared £1,000 by its publication—no small sum in those days. De Foe, in rapid succession, produced his other notable works of fiction. *Moll Flanders* (1721), *Journal of the Plague* (1722) *Colonel Jack* (1721), *Adventures of Roxana* (1724), and the *Memoirs of a Cavalier,* which Chatham used to recommend as the best account of the civil wars extant, bear witness to De Foe's industry during these years. De Foe's style, both in his political and imaginative works, is simple, clear, and vigorous. His fictitious narratives are characterized by an unparalleled appearance of truth. This is pre-eminently the case in the *Journal of the Plague,* which for a long time imposed upon the well-known Dr. Mead as genuine. See *Life* by Lee; and that by Minto (1882).

DEFOLIATION, n. *dĕ-fō′lĭ-ā′shŭn* [L. *de,* down; *folĭŭm,* a leaf]: the fall of leaves of plants.

DE FON′TAINE, Felix, American journalist: b. Boston, Mass., 1832; d. Columbus, S. C., 1896, Dec. 11. The first statement given to the North of the attack on Fort Sumter, was written by him; and he was correspondent of the Charleston *Courier* from the principal battlefields dur-

ing the Civil War. Subsequently he went to New York, and was connected with the *Herald* much of the time until his death. He was the author of *Cyclopeædia of the Best Thoughts of Charles Dickens; Gleanings from a Confederate Army Note-Book;* and *Birds of a Feather Flock Together.*

DEFORCE, v. *dĕ-fōrs′* [OF. *déforcer*—from OF. *de* for *des*, L. *dis*, apart, away; *forcer*, to force: mid. L. *disfortĭārĕ* from *fortis*, strong]: to keep possession of an estate unlawfully. DEFOR′CING, imp. *-sĭng.* DEFORCED′, pp. *-fōrst′.* DEFORCE′MENT, n. *-fōrs′mĕnt*, the holding of lands, etc., unlawfully (see FREEHOLD: DISCONTINUANCE): in *Scot.*, the resisting of an officer of justice in enforcing the law. DEFOR′CIANT, n. *-fōr′shĭ-ănt*, one who: also a title of the defendant in a suit for levying a fine of lands (q.v.).

DE FOR′EST, JOHN WILLIAM, American novelist: b. Humphreysville, Conn., 1826, March 31; d. 1906. He passed many years in independent study and foreign travel, becoming a proficient in several languages; entered the army as captain at the outbreak of the Civil War, and rose to major; and from 1850 till his death was a fertile writer of essays, short stories, and novels for the leading magazines, taking prominent rank among American novelists. Among his works are: *History of the Indians of Connecticut* (1853); *Oriental Acquaintance* (1856); *Witching Times* (1856); *European Acquaintance* (1858); *Seacliff* (1859); *Miss Ravenel's Conversion* (1867); *Overland* (1871); *Kate Beaumont* (1872); *The Wetherell Affair* (1873); *Honest John Vane* (1875); *Justine Vane* (1875); *Playing the Mischief* (1876); *Irene Vane* (1877); *Irene, the Missionary* (1879); *The Oddest of Courtships; or, The Bloody Chasm* (1881); *A Lover's Revolt* (1898); *Overland* (1899); *The De Forests of Avesnes and New Netherland* (1900).

DEFORM, v. *dĕ-fawrm′* [F. *déformer*—from L. *deformārĕ*, to disfigure—from *de*, *forma*, a shape: It. *deformare*]: to make ill-shaped and displeasing to the eye; to mar or injure the shape of; to make ugly; to disfigure; to deprive of comeliness; to dishonor: N. in *OE.*, ugly; disfigured. DEFOR′MING, imp. DEFORMED′, pp. *-fawrmd′:* ADJ. disfigured; misshapen; ugly; base. DEFORM′ER, n. one who. DEFORMATION, n. *dĕf′ŏr-mā′shŭn* [F. —L.]: act of disfiguring or defacing. DEFORMEDLY, ad. *dĕ-fŏr′mĕd-lĭ.* DEFOR′MITY, n. *-mĭ-tĭ*, any unnatural shape or form; defect; distortion.

DEFOR′MITY: any unnatural variety of form which mars the external appearance. Deformities may be *congenital* or *acquired*, according as they occur before or after birth. The former class were considered by the ancients to carry some important meaning in their mysterious shapes, and to show the anger of the gods; hence, they termed them *monsters*, from *monstrare*, to show; and even in later times, they were popularly believed to be the result of the most hideously unnatural combinations. Modern scientific writers have, however, made them a subject of special study, under the name Teratology [*teras*,

monster, and *logos*, science], and their researches have shown that deformities generally depend on some arrest of development of the fetus, or some accidental position which it has assumed, or some inflammatory disease which has caused unnatural adhesion of parts. It has been found that in 3,000 births in Paris, there occurs about one monster. They generally follow some definite law. Deformities are more common among domestic than wild animals, among mammalia than birds, and very rare among fishes and the invertebrata.

It is a common belief, that the mind of the female parent has an influence over the shape of her infant; but though some singular coincidences have occurred, there is no scientific proof that such is really the case. This theory, however absurd, was eagerly adopted in the middle ages; it was, in fact, often appealed to in the interest of mercy as a loophole of escape for pregnant women, who, by the barbarous ignorance of the time, might be condemned to torture; and so universal has the popular belief in this theory become, that even at the present day no scientific demonstration to the contrary has proved sufficient to undermine it. Deformities are, however, in many cases, hereditary, as may be seen in the instances of additional fingers and toes, and of hare-lips.

The chief congenital deformities may be classed under the following heads:

Deformity as regards *number* of parts; as, for instance, the Sirens, who have apparently but a single inferior extremity which tapers to a point, or the Cyclops, with but one eye; or the head itself may be absent, or some organ, as the brain. Such deformities from a deficiency of parts, may also result from amputation of portions of the limbs of the fetus when still within the uterus by the pressure of the umbilical cord, or constriction by fibrous bands There may be a multiplicity of parts one of the most familiar instances of which is the presence of supernumerary fingers or toes.

Deformity with regard to *size*. This may involve the whole body, as in dwarfs, or one limb or part of a limb only may be diminutive. The body may be oversize, as in giants, as well as undersize.

Deformity as regards *shape:* this results generally from retarded growth, the parts of the embryo not consolidating as growth advances, as in hare-lip; or from irregular muscular contractions, as in Club-foot (q.v.); or by two or more parts coalescing, as two fingers; or in Cyclopy, when both the eyes run into one.

For *Acquired Deformities*, see their special titles.

DEFRAUD, v. *dĕ-frawd'* [F. *défrauder*—from L. *defraudārĕ*, to defraud—from *de, fraudo*, I cheat: It. *defraudare*]: to deprive of a right by deceit or artifice; to cheat. DEFRAU'DING, imp. DEFRAU'DED, pp. DEFRAU'DER, n. a cheat.—SYN. of 'defraud': to trick; cozen; deceive; frustrate.

DEFRAY, v. *dĕ-frā'* [F. *défrayer*, to settle the expense of a house, etc.—from *de*, *frais*, charges, expenses]: to pay or settle, as expenses or charges; to bear, as cost. DEFRAY'ING, imp. DEFRAYED', pp. *-frād'*. DEFRAY'ER, n. one who. DEFRAY'MENT, n. payment.

DEFREGGER, *dā-frĕg-ĕr*, FRANZ, German genre painter b. Stronach, 1835, April 30. The subjects of almost all his pictures are drawn from the Tyrolese peasant life, his few religious pictures having been in the main unsuccessful.

DEFT, a. *dĕft* [AS. *dæfte*, fit, convenient]: neat; handsome; dexterous. DEFT'LY, ad. *-lĭ*, dexterously. DEFT'NESS, n. state of being deft; neatness.

DEFUNCT, a. *dĕ-fŭngkt'* [L. *defunctus*, ended, finished —from *de*, *functus*, performed: It. *defuncto;* F. *défunt*, deceased]: having ended life; dead: N. a dead person. DEFUNCTION, n. *dĕ-fŭngk'shŭn*, in *OE.*, death.

DE FU'NIAK SPRINGS, Fla., town, county-seat of Walton co.; situated on the Louisville & Nashville R.R., 80 miles northeast of Pensacola, and about 25 miles north of the Gulf of Mexico. The industries of the place are those of an agricultural and fruit-growing country. It is the site of a State Normal School, and the Florida Chautauqua. Its population increased nearly threefold between 1890 and 1900. Pop. (1910) 1,750.

DEFY, v. *dĕ-fī'* [F. *défier*—from OF. *desfier*—from It. *disfidare*, to challenge—from mid. L. *diffidārĕ*, to renounce faith, to defy—from *dis*, asunder, apart; *fido*, I trust; *fidēs*, trust, faith—*lit.*, to mistrust]: to dare; to brave; to treat with contempt; to challenge; to invite one to a contest. DEFY'ING, imp. DEFIED', pp. *-fīd'*. DEFI'ER, n. *-ér*, one who. DEFI'ANCE, n. *-fī'ăns* [F.]: a challenge; a daring—usually implying contempt.

DE GAR'MO, CHARLES; American educator; b. Wisconsin, 1849, Jan. 7. He was graduated from the State Normal University of Illinois in 1873, was principal of public schools, Naples, Ill., 1873–6; professor of modern languages at the State Normal University 1886–90; and president of Swarthmore College 1891–8. Since 1898 he has been professor of the science and art of education at Cornell University. He has published: *Essentials of Method; Herbart and Herbartians; Language Lessons.*

DEGAS, *dė-gâ*, EDGAR HILAIRE GERMAIN, *zhăr-măn':* French painter and engraver; b. Paris, 1834, July 19. He was a pupil of La Mothe, and studied at the Beaux Arts in Paris. He is one of the most interesting members of the impressionist school, having worked in pastel, etching, dry point, and stone-engraving, producing numerous interiors of theatres, and café-concerts, foyers of the opera, views of the circus and of laundries, studies of dancers, etc., and all with a masterly touch. He also produced several portraits of Manet.

DEGENDER, v. *dĕ-jĕn'dėr* [see DEGENERATE]: in *OE.*, to generate; to make degenerate. DEGEN'DERING, imp.

DEGEN'DERED, pp. *-dĕrd.* DEGEN'ERACY, n.: see under DEGENERATE.

DEGENERATE, v. *dĕ-jĕn'ĕr-āt* [L. *degenĕrātus,* departed from its race or kind—from *de, genus,* race, kind: It. *degenerare:* F. *dégénérer*]: to decay in the qualities of race or kind; to become worse; to decay in good qualities; to decline in virtue: ADJ. that has fallen from a good to a worse state or condition; base; mean; fallen: N. a person who is degenerate or utterly corrupt. DEGEN'ERATING, imp. DEGEN'ERATED, pp. DEGEN'ERA'TION, n. *-ā'shŭn* [F.—L.]: the gradual deterioration in a part of a living body, in the whole living body, or in a race; in *bot.,* a deterioration of growth or development in a part, as when scales take the place of leaves. DEGEN'ERACY, n. *-ă-sĭ,* a growing worse; decline in good qualities; vice; meanness. DEGEN'ERATELY, ad. *-lĭ,* in a degenerate manner; unworthily. DEGEN'ERATENESS, n. the state of being degenerate or corrupt.

DEGENERATION: the loss or the impairment of the qualities that are peculiar to the race, or the degradation to a lower scale of existence or descent to an inferior type. Morel gives a classification of persons who show a tendency to degeneration. The first generation presents nervous temperaments, moral depravity and excesses of appetite and action, the second shows tendencies to apoplexy, severe neuroses, alcoholism, etc., the third shows intellectual incapacity and mental derangements and tends toward suicide, and the fourth suffers from arrested growth, presents bodily deformities and manifests hereditary imbecility. With this last generation the race comes to an end through sterility. As a process degeneration is opposed to heredity and it illustrates the law of variation by which animal forms tend to depart from the ancestral type. No definite disease can be inherited, but a predisposition in the way of a deficiency in power of resistance to the attacks of micro-organisms may be transmitted. In degenerative heredity there is a weakened condition in the germinal substance which leads in the descendants to the various manifestations of morbid conduct mentioned above. The stigmata of degeneracy are most varied. In the first generations they are mostly of the mental and social kind, morbid ideation and antisocial conduct. There may be either an excess or a deficiency of mental energy and stability. Sometimes the mental powers develop slowly and hence in adult life show deficiency and sometimes they develop prematurely—at least some powers do—and show a disproportionate degree of activity which marks the bearers for geniuses, or as Lombrosso sometimes calls them 'intellectual fools' or 'fools of genius.' Here come in musical freaks, mathematical prodigies, certain kinds of reformers—cranks—religious fanatics—the prophets, second Christs—inventors of perpetual motion machines, etc. Criminals, nihilists and extreme (anti) socialists have been classed as degenerates. The physical stimata are even more striking and numer-

ous, although these are not so generally found except in the third and fourth generations of degeneration These group themselves first about the nose, mouth and eyes, second about the upper and lower limbs and third as defects of glandular action and of alimentation Under the first come facial asymmetry, cleft palate, arched and narrow palates, irregular, imperfect and decaying teeth, strabismus, nystagmus and squinting of the eyes, dished faces, receding chins, etc. Under the second group are included supernumerary fingers and toes, webbed fingers and toes, absent fingers, clubbed feet, bandy legs, hands attached either to elbow or shoulder joints, feet attached directly to hip joint, etc., Under the third head comes scaly skins thick coarse skin with hypertrophied glands around the nose watering of the eyes, driveling and drooling, foul exudations from the feet, mouth and arm pits, etc

DEGER *dā'ger*, Ernst: b. Bockenheim, Hesse-Cassel, 1809, Apr. 15; d. Dusseldorf, 1885, Jan. 27: painter. He studied painting under M. Schadow at the Dusseldorf Acad , and began his career by making remarkable copies of Raphael's *Virgin*. Through the influence of Steinla and Overbeck he applied himself wholly to painting religious subjects; did the fresco painting in the Church of St Apollinaris at Remegen on the Rhine, and in the chapel of the castle of Stolzenfels; produced a large number of altar-pieces; was appointed prof. in the Munich School of Fine Arts by the King Bavaria, and subsequently in the Dusseldorf School; and was elected a member of the academies of fine arts in Munich and Berlin. Among his noted works are: *Christ, St John the Baptist and the Prophets, The Garden of Olives, The Flagellation, Jesus Carrying the Cross, The Ascension, Holy Virgin and St. Joseph The Infant Jesus, Pieta, Annuneiation, Virgin Adoring Christ, Madonnas and Seven Scenes from the Life of Christ,* in St. Apollinaris' Chapel, Remegen; *Adam and Eve*, Raczynski Gallery, Berlin His works are noted for vigor and finish. He was a leader of the so-called 'Nazarean School '

DEGERANDO, *dĕh-zhĕh-rŏng-do'*, Marie Joseph, Baron 1772. Feb 29—1842, Nov. 12; b. Lyon, France: author and philanthropist. His family was originally from Italy. He studied at the College of the Oratoire of Lyon with a view to becoming a priest, but the persecutions of the revolutionists altered his plans. In 1797, he went to Paris. The *eoup-d'état* of the 18th Fructidor compelled him to flee to Germany, where he entered the army of Massena as a common soldier While at Colmar with his regiment, Degerando wrote a treatise, which was 'crowned' by the Academy, and which was afterward enlarged and published under the title of *Des Signes et de l' Art de penser, eonsidérés dans leurs Rapports Mutuels* (Par. 1800). In 1802 appeared his *De la Génération des Connaissances Humaines*, a precursor of his *Histoire comparée des Systèmes de Philosophie relativement aux Principes des Con-*

naissances Humaines (Par. 1803; German, by *Tennemann*), which is reckoned the best French work on the history of philosophy. It procured him, in the following year, admission into the Académie des Inscriptions et des Belles-lettres. About the same time, he was appointed sec. gen. to the ministry of the interior, and subsequently held a variety of high offices under Napoleon But Degerando is even better known, and has done more service, by his philanthropic than his philosophic writings. To the former class belong his excellent work, *Le Visiteur du Pauvre* (Par. 1820), which obtained the Montyon prize, as did also his *Du Perfectionnement Moral*, etc. (Par. 1824), his *Cours Normal des Instituteurs Primaires* (Par. 1832), *Institutions du Droit Administratif* (Par. 1835), *Education des Sourds-muets de Naissance* (Par. 1827). *Des Progrès de l'Industrie* (1841). Degerando was elevated to the peerage 1837, and at his death was vice-president of the council of state.

His son, A. DEGERANDO, has written two interesting works—*Essai Historique sur l'Origine des Hongrois* (Par. 1841), and *Transylvanie et ses Habitants* (Par. 1845).

DEGGENDORF, *dĕg'ghĕn-dŏrf:* town of lower Bavaria, on the Danube, 29 m. n.w. of Passau. It is well built, and has several churches, a hospital, orphan-house, and poor-house. Deggendorf has pottery and linen factories, and carries on brisk trade in these articles, as well as in cattle, fruit, wood, etc. There is a remarkable church on the Geiersberg, possessed of a miraculous wafer, and having 'doors of grace,' opened only once in the year. Many pilgrims (often numbering more than 30,000 annually) flock hither, Pope Innocent VIII. having promised general absolution to all such as visited the church. Pop. (1880) 6,226, (1890) 6,250.

DEGLUTITION, n. *dĕg'lô-tĭsh'ŭn* [F. *déglutition*—from mid. L. *deglūtĭtĭōnem*—from *de*, down; *glūtĭō*, I swallow]: the act or power of swallowing food; see SWALLOWING

DEGRADE, v. *dĕ-grād'* [F. *dégrader*, to degrade—from mid. L. *degradārĕ*, to deprive of rank—from *de*, *gradus*, a step or degree, rank]: to reduce from a higher to a lower rank or degree; to deprive of rank or office; to lower; to disgrace. DEGRA'DING, imp.: ADJ. lowering to the dignity, character, and capacities of man. DEGRA'DED, pp.: ADJ lowered, as from a higher rank or dignity; lowered to a state of wretchedness or misery; in *heraldry*, placed on steps or degrees, as in a *Cross Calvary*. DEGRADATION, n. *dĕg'ră-dā'shŭn* [F.—L.]: a reducing in rank; a depriving of office or situation; the state of being reduced from a more to a less honorable condition; baseness; a state of wretchedness, misery, or crime; in *geol.*, a wasting or wearing down. DEGRADINGLY, ad. *dĕ-grā'dĭng-lĭ*.—SYN. of 'degrade': to abase; humble; disgrace; debase; humiliate; hishonor; demean; reduce; lessen.

DEGREE, n. *dĕ-grē'* [F. *degré*, a step—from L. *de*, *gradus*, a step]: a step up or down; a portion of space taken as

a unit of measure, as a degree of latitude; the 360th part of the circumference of a circle (see CIRCLE); the 90th part of a right angle; a division on a mathematical or other instrument; a stage in progression; rank or station in society; step or remove in line of descent; measure or extent; an interval of sound; rank or title conferred by a university. BY DEGREES, step by step; gradually.—SYN. of 'degree': class; order; rank; step; grade; position; station; quality; measure; extent.

DEGREE', in a College or University: recognition of the student having made a certain step in advance, and having attained to a certain stage in his academical career The evidence of a degree is usually called a Diploma (q.v.). Degrees may be divided into various classes, according to the privileges which they confer. 1. They are either simple certificates of attainment granted by a competent authority; attesting either that the college or university granting them has ascertained the fact by examination—in which case they are ordinary degrees—or that the common fame of the individual is such that the learned body conferring the degree is willing to take it for granted, in which case they are honorary degrees. To this class belong some degrees in arts, and the honorary degrees LL.D., D.C.L., and D.D., granted by most universities, and in the United States by nearly all colleges. 2. They are licenses to teach the branch of knowledge with which the holder is certified to be acquainted. To this class belonged all doctors', and probably all masters' degrees in the universities of the middle ages: see DOCTOR. 3. They are licenses to practice a certain profession or art. As the latter privilege is one in which the general community is more deeply interested than in either of the others, it is in some countries requisite to its full exercise that the university degree should be accompanied by a government license. These latter degrees—of which M.D. and D.C.L. (see DOCTORS-COMMON) are the only ones known in Britain,—in this case resolve themselves into one or other of the former classes.

University degrees, like most institutions which have held their place in society long, arose out of public exigencies, and are not traceable to any single founder or to any single act. There is every reason to suppose that, substantially, they have existed for ages. The doctors or teachers of the law (*nomodidáskalon*), so often mentioned in the New Testament—probably the scribes also—were a class, taken, it would seem, very frequently from the sect of the Pharisees, but essentially distinct from them (Luke v. 17), possessing privileges very closely resembling those which were attached to the degree of a teaching doctor in after-times. In classical Greece, education though far less formal than it afterward became, was probably more systematic than is commonly supposed. Mr. Kirkpatrick, in his ingenious book on the *Historically received Conception of the University*, has traced in the schools of Isocrates and Plato, not only substantially the function, but much even of the

external organization of the university. He has shown also, very clearly, that it was the systematic training which had became necessary for success in public life that called the Sophists into existence, and gave to them their marvellous social influence. It was the ambition, not of the higher class of orators and statesmen alone, but of every noisy demagogue who aspired to notoriety, to come before the public with the prestige of having been the pupil of some famous Sophist, or, as we should say, of having been to a good school, and taken a good degree. The appliances of modern teaching existed unquestionably in the museum at Alexandria, and it is inconceivable that those who had passed through the *kuklos* or cycle of studies, should not have carried away some testimonial of proficiency resembling a degree. As there was a distribution both of teachers and of students into what we should call the faculties of philosophy, philology, and medicine, it is probable, moreover, that there were distinct degrees corresponding to each of them. During the three centuries which intervened between Alexander and Augustus, Athens continued the great school of philosophy, as Rhodes was of oratory, and Alexandria of philology and medicine. The importance of an education in the Greek schools rather increased than diminished during the period of the Roman empire. So entirely, indeed, was the success of the young provincial in public life also dependent upon his literary acquirements that, as Mr. Kirkpatrick informs us, students, before leaving the provinces for Rome, were obliged to obtain a written permission from a magistrate, and that a record of the proficiency of each student was sent in to the government, in order that the latter might be thereby guided in the selection of fit individuals for the public service. In Constantinople, moreover, down to the very last, lifeless and unproductive though the intellectual life unquestionably was, it was formally organized to an extent which reminds one of China rather than of any existing European nation. The worthless and contemptible Byzantines, male and female, like the Chinese, passed endless examinations, and took abundance of degrees. After the incursion of the northern nations, the extreme rudeness of the general community of w. Europe caused the learned class to stand out from it with a prominence unknown in the society of antiquity, and hence the greater importance which academical degrees assumed in the middle ages. A man who had passed through the trivium or quadrivium at Constantinople before barbarism had made learning rare, or who had received the far higher instruction communicated at the museum of Alexandria, did not differ from the society which surrounded him to the same extent as did a master or a doctor at Paris or Bologna.

The minute history of academical degrees in the middle ages is involved in much obscurity. The following are passages from the above-mentioned work of Mr. Kirkpatrick, who has gone over the authorities with much care: 'Wood mentions (*Hist. and Antiq. of Oxford*, I, 50) that St. John of

Beverley (680) was commonly reported to have been the first who took the degree of Master of Arts at Oxford. The same writer informs us that this degree had become common in the reigns of John and Richard I. According to Bulæus (*Hist. Univ. Paris*, II. 566, 679, sqq.), academic degrees were first instituted at Bologna. The forms designative of the various orders of academic dignity in that university are stated to have been the Baccalaureatus, Licentiatus, and Doctoratus. Of these the last two were probably equivalent to the degrees of the master incipient and the magister socius or regent of Paris. Certain stadia, or successive courses of legal study, are said to have been in existence from the time of Justinian. The five years devoted to the acquisition of juristic knowledge were divided into the Anni Justiniani, Edictales, Papinianistæ, Lytæ, and Prolytæ. The student who had passed through all successively was described as a licentiatus, from the circumstance that he was considered qualified to discharge the duties of an antecessor or public professor of this subject. The practice adopted in this respect by the schools of jurisprudence was afterward transferred to theology at Paris by Peter Lombardus. The name Bachelor is supposed by Malden (*History of Universities and Academic Degrees*, p. 23) to have been borrowed from the terminology of the military hierarchy of those ages': see BACHELOR. 'Bachelors are often styled scholars (Wood, *Hist. and Antiq. of Oxford*, I. 59), and the individual invested with this degree was regarded as, at the utmost, an imperfect graduate. At the same time, in accordance with the system of mutual instruction so thoroughly adopted in the schools of the middle ages, the more advanced class of scholars were both encouraged and commanded to perfect their own acquirements, and extend the educational influences of the university into the minutest ramifications of the system by teaching and catechizing the junior members of their own body (Crevier, *Histoire de l'Université de Paris*, II. 160). Bachelors, though thus intrusted with certain tutorial functions, never possessed any of the legislative powers assigned to the masters' (pp. 206, 7). It was to the teaching masters—and all who took the master's degree were bound to perform the duties of tuition for a time—that the term regent was applied both on the continent and in Scotland. On retiring from the office of regent, the master—at Paris, at least—ceased to take an active share either in the legislation or the government of the university (Bulæus, par. iii., 420). The question as to whether the institution of teaching masters or regents ought to be revived, to the extent of permitting them to compete on equal terms with the endowed professors, was raised in Scotland some years ago. In the German universities, the Doctor, by a *Habilitation* thesis, qualifies himself to lecture in the university as *privat docent;* and from among the *docents*, the professors are usually chosen. See BACHELOR: MASTER OF ARTS: DOCTOR: REGENT: UNIVERSITY, COLLEGE.

DEGREE, in Music: difference of position or elevation of the notes on the lines and spaces. When notes are on the same line or space, they are on the same degree, even though one of the notes should be raised by a sharp, or lowered by a flat. When two notes follow diatonically, so that one of them is on a line, and the other on the space adjoining, the interval is of one degree. Subtracting one from an interval, gives the degrees which separate the two notes; thus, a third is separated by two degrees; a fourth by three, etc.

DEGREE OF LAT'ITUDE: space along the Meridian (q.v.) through which an observer must pass to alter his latitude by one degree—i.e., in order to see the same star one degree nearer to or further from the zenith: see LATITUDE. This space must be found by actual measurement; and owing to the earth being an oblate spheroid, and not a sphere, it varies with the place of observation—the degrees being generally longer toward the poles, where the earth is flatter, and shorter at the equator, where the earth is more curved. If the earth were a sphere, a degree would be exactly a 360th part of the meridian. As it is, the length of a degree of latitude depends on the latitude of the place. From a variety of observations conducted at various times and places, from as far back as the time of Eratosthenes (B.C. 250), tables have been constructed showing the length of degrees at different latitudes. The length of 'the middle degree,' as it is called, or that of places in latitude 45°, may be taken approximately at 69 $\frac{1}{10}$ English miles. The ascertained differences between degrees of latitude is one of the proofs of the earth's spheroidicity. See GEODESY.

DEGREE OF LON'GITUDE: space between two meridians that make an angle of 1° at the poles, measured by the arc of a circle parallel to the equator passing between them. It is clear that this space is greatest at the equator, and vanishes at the poles; and it can be shown that it varies with the cosine of the angle of latitude. The annexed table shows the lengths of a degree of longitude for places at every degree of latitude from 0° to 90°: it is computed on the supposition that the earth is a sphere.

Degree lat.	English Miles.	Degree lat.	English Miles.	Degree lat.	English Miles.
0	69.07	14	66.95	28	60.93
1	69.06	15	66.65	29	60.35
2	69.03	16	66.31	30	59.75
3	68.97	17	65.98	31	59.13
4	68.90	18	65.62	32	58.51
5	68.81	19	65.24	33	57.87
6	68.62	20	64.84	34	57.20
7	68.48	21	64.42	35	56.51
8	68.31	22	63.97	36	55.81
9	68.15	23	63.51	37	55.10
10	67.95	24	63.03	38	54.37
11	67.73	25	62.53	39	53.62
12	67.48	26	62.02	40	52.85
13	67.21	27	61.48	41	52.07

Degree lat.	English Miles.	Degree lat.	English Miles.	Degree lat.	English Miles.
42	51.27	59	35.54	75	17.86
43	50.46	60	34.50	76	16.70
44	49.63	61	33.45	77	15.52
45	48.78	62	32.40	78	14.35
46	47.93	63	31.33	79	13.17
47	47.06	64	30.24	80	11.98
48	46.16	65	29.15	81	10.79
49	45.26	66	28.06	82	9.59
50	44.35	67	26.96	83	8.41
51	43.42	68	25.85	84	7.21
52	42.48	69	24.73	85	6.00
53	41.53	70	23.60	86	4.81
54	40.56	71	22.47	87	3.61
55	39.58	72	21.32	88	2.41
56	38.58	73	20.17	89	1.21
57	37.58	74	19.02	90	0.00
58	36.57				

DEGREES OF LAMBETH: degrees granted by the Archbishop of Canterbury. He can confer all the degrees taken in the universities of Oxford and Cambridge, though not all the privileges conveyed by those degrees.

DEGREES OF RELATIONSHIP: see CONSANGUINITY: AFFINITY.

DE HAAS, MAURICE FREDERICK HENDRICK: an American marine painter; 1832, Dec. 12—1895, Nov. 23; b. in Rotterdam, Holland; was made artist to the Dutch navy 1857, and removed to New York city in 1859. His best known American work is *Farragut Passing the Forts.* His other works, chiefly pictures of the English Channel and the French coast, include *Storm off the Isle of Jersey; After the Wreck; Seashore near Hastings;* etc.

DE HAVEN, *de hā'ven*, EDWIN J.: naval officer: 1819–1865, Oct. 2; b. Philadelphia. He entered the U. S. navy as midshipman 1829, and served 36 years, being then retired on account of ill-health. During 1839–42 he was engaged in Wilkes's exploring expedition. He commanded the first Grinnell expedition to the Arctic regions in search of Sir John Franklin, an account of which was written by Dr. E K. Kane. After returning from the north, De Haven was employed in the coast survey and in the national observatory in Washington, D. C.

DEHISCE, v. *dē-hĭs'* [L. *dehis'cĕrĕ*, to split open, to part asunder—from *de*, down, fully; *hiscĕrĕ*, to gape]: to open or part asunder, as the seed-pods of plants. DEHIS'CING, imp. DEHISCED', pp. *-hĭst'*. DEHIS'CENT, a. *-sĕnt* [F.—L.]: opening like the pod of a plant. DEHIS'CENCE, n. *-sĕns* [F.—L.]: a gaping or opening, as of a fruit containing seed.

DEHYDRATE, v. *dē-hī'drāt* [L. *de*, down, from; Gr. *hudor*, water]: in *chem*, to remove water from. DEHYDRA'TION, n. *-shŭn*, the act of removing water from.

DEIANEIRA, *dē-ĭ-a-nī′râ*, or DEJANIRA, *dĕj-a-nī′râ:* in *Greek mythology*, the daughter of Œneus, King of Calydon, for whom Hercules wrestled with Achelous, the river god, and killed him. Obliged to flee for the homicide, Hercules took Deianeira to Trachis, and while *en route* slew the centaur Nessus, who, dying, persuaded Deianeira that any one to whom she would give a shirt steeped in his blood would love her constantly. When Hercules subsequently took Œchalia and carried off Iole, Deianeira, moved either by love or jealousy, gave him a blood-soaked tunic, which poisoned him the moment he put it on.

DEICIDE, n. *dē′ĭ-sīd* [F. *déicide;* It. *deicidio*—from L. *deus*, a god; *cædo*, I kill]: the slaughter or murder of a god —applied to the crucifixion of Christ. DE′IFORM, a. *-fawrm* [L. *forma*, shape]: like a god.

DEIFIED, DEIFICATION, etc.: see under DEIFY.

DEIFY, v. *dē′ĭ-fī* [F. *déifier*, to place among the gods—from mid. L. *deifĭcārĕ*—from *deus*, a god; *făciō*, I make]: to exalt to the rank of a god; to reverence or praise excessively; to treat as an object of the highest regard. DE′IFYING, imp. DE′IFIED, pp. *-fīd:* ADJ. raised to the rank of a deity or god. DEIFICATION, n. *dē′ĭ-fĭ-kā′shŭn* [F.—L.]: the act of exalting to the rank of a god. DEIF′IC, a. *-ĭf′ĭk*, or DEIF′ICAL, a. *-ĭ-kăl*, divine.

DEIGN, v. *dān* [OF, *deigner;* F. *daigner*, to condescend —from L. *dignārī*, to deem worthy or deserving of—from *dignus*, worthy]: to deem or think worthy; to condescend; in *OE.*, to permit; to allow. DEIGN′ING, imp. DEIGNED, pp. *dānd.*

DEI GRATIA, *dē′ī-grā′shĭ-a* [Lat. 'by the favor of God']: formula taken from several apostolical expressions in the New Testament. It is believed to have been formally used first by the bishops at the council of Ephesus, 431. Afterward, it came to be appended by archbishops, bishops, abbots, abbesses, deans, monks, and even chaplains, to their titles, in letters and other documents, as an expression of dependence on the Most High.. After the middle of the 13th c., when the sanction of the pope began to be considered necessary to ecclesiastical offices, the higher clergy wrote *Dei et Apostolicæ sedis gratiâ*, 'by the favor of God and the apostolic see.' At a later period, many of them preferred to write *miseratione divinâ*, *permissione divinâ*, and the like; but they still continue to be styled by others *Dei gratiâ*. In the British Islands this style was generally dropped about the time of the Reformation, but it was occasionally given to the archbishops of Canterbury and York, even after the beginning of the 17th c. Beginning with the times of the Carlovingians, many temporal princes, earls, and barons made use of the formula Dei gratiă; and before the 15th c., no idea of independence or of divine right seems to have attached to it. But in 1442, King Charles VII. of France forbade its use by the Comte d'Armagnac, and in 1449 obliged the Duke of Burgundy to declare that he used it without prejudice to the rights

of the French crown. These instances show that it had then begun to be regarded as belonging exclusively to sovereigns who owed no allegiance to any other earthly potentate or power. In this way, what was originally a pious expression of humility, came to be looked upon as an assertion of the doctrine of the 'divine right' of kings.

DEILEPHILA, n. *dī-lĕf′ĭl-a* [Gr. *deilē*, the afternoon, the evening; *phileō*, I love]: genus of *Sphingides* (hawk-moths). D. *lineata* is our common, white-lined, day species.

DEINOCERATA, or DINOCERATA, n. plu. *dī′nō-sĕr′ă-tă* [Gr. *deinos*, terrible; *kĕrătă*, horns]: in *geol.*, an extinct order of Tertiary mammals.

DEINICHTHYS: see DINICHTHYS.

DEINORNIS: see DINORNIS.

DEINOSAURIA: see DINOSAURIA.

DEINOTHE′RIUM: see DINOTHERIUM.

DEIPAROUS, a. *dē-ĭp′ă-rŭs* [L. *deus*, a god; *părĭō*, I bring forth]: bringing forth a god, applied to the Virgin Mary.

DEISM, n. *dē′ĭzm* [F. *déisme*, deism—from L. *deus*, a god: comp. Gael. and Ir. *dia;* W. *duw*, God]: the belief of those who admit the existence of one God, but who generally deny revelation; the belief in natural religion only. DE′IST, n. *-ĭst*, one who believes in one God, but not in revelation; a theist. DEIS′TIC, a. *-tĭk*, or DEIS′TICAL, a. *tĭ-kăl*, pertaining to deism. DEIS′TICALLY, ad. *-lĭ*. DEITY, n. *dē′ĭ-tĭ* [OF. *deite*—from L. *dĕĭtātem*, a deity]: the Supreme Being; God; a heathen god; an idol.—SYN. of 'deist': infidel; unbeliever; freethinker; skeptic.

DE′ISM: properly, belief in a God, as opposed to atheism; but to express this sense, *Theism* (q.v.) is the term now used. On the other hand, Deism is generally understood to imply the denial of a revelation; and a Deist is one who holds the existence and providence of God, but grounds his belief on reason and evidence, rejecting the authority of the Scriptures as a divine revelation. The name has been often used vaguely by way of reproach, as equivalent to 'infidel'. It is seldom applied to persons of the present day, having given place to such terms as rationalist, free-thinker, liberal; since these are preferred by thinkers of this school.

The term Deists, or Free-thinkers, is sometimes used to designate a school or series of writers who appeared in England in the 17th and 18th c., and who aimed at establishing what they called Natural Religion, upon the basis of reason and free inquiry, and then bringing all positive or revealed religion to the test of this. They are looked upon as the precursors of German Rationalism in theology. The leading names in this school are Lord Herbert of Cherbury (died 1648); John Toland, whose *Christianity not Mysterious* (Lond. 1696) gave exact expression to the tendency of the Deists; Lord Shaftesbury; Anthony Collins (died

1729), the friend of Locke; Thomas Woolston; Matthew Tindal, the author of *Christianity as Old as the Creation, or the Gospel a Republication of the Religion of Nature* (Lond. 1730); Viscount Bolingbroke (died 1751). See these titles. In the United States, Thomas Paine (q.v.), of lower literary grade and less philosophical in thought than the writers above named, was the most popular Deist of the 18th c.

DEJECT, v. *dĕ-jĕkt'* [L. *dejectus*, thrown or cast down—from *de*, *jactus*, thrown]: to cast down, to depress the spirits; to dishearten; to cause to look sad. DEJEC'TING, imp. DEJEC'TED, pp.: ADJ. cast down; low-spirited. DEJEC'TEDLY, ad. *-lĭ*. DEJEC'TEDNESS, n. the state of being cast down; lowness of spirits. DEJEC'TION, n. *-jĕk'-shŭn* [F.—L.]: a casting down; melancholy; depression of mind; lowness of spirits caused by misfortune, etc. DEJEC'TORY, a. *-tẽr-ĭ*, having power or tendency to cast down; tending to promote evacuation by stool.—SYN. of 'dejected': sad; gloomy; mournful; melancholy; moody.

DÉJEÛNE, n. *dā-zhôn'*, or DÉJEÛNER, n. *dā'zhô-nā'* [F. *déjeûner*, to breakfast]: a breakfast or lunch, generally of a public or ostentatious character.

DE JURE: see DE FACTO.

DE KALB, Ill., city in De Kalb co., on the Chicago & Northwestern Railroad, 60 m. w. of Chicago. The industries of the city are the manufacture of wire and other iron products, glove and shoe manufacturing and agricultural machinery. De Kalb has three banks with a combined capital of $350,000. The city is governed by a mayor and council of 10 members, elected for two years, and owns its own water-plant. The Northern Illinois State Normal School is located here. Pop. (1910) 8,102.

DE KALB, *de kălb*, JOHN, Baron: 1721, June 29—1780, Aug. 19; b. Alsace: general in American revolution. He received a military education in France, became an officer in the French army, was a confidential agent of the govt. to the American colonies, was engaged by Silas Deane to serve in the patriot army, accompanied Lafayette to America 1777, and was soon afterward appointed a maj.-gen. by congress. He served under Washington at Philadelphia, Valley Forge, and in N. J. and Md.; was sent to relieve Gen. Lincoln in the siege of Charleston 1780, Apr.; and as second in command in Gen. Gates's army headed the Md. and Del. troops in the battle of Camden, S. C., 1780, Aug. 16, and maintained his position against Cornwallis till he fell wounded in 11 places. He died three days after the battle. On the 106th anniversary of the battle a bronze statue of Gen. De Kalb, ordered by congress, was unveiled at Annapolis.

DE KAY, CHARLES, American poet, grandson of Joseph Rodman Drake: b. Washington, D. C., 1848, July 25. He was educated at Yale and has been for many years the literary and art editor of the New York *Times*. His poems are mostly founded on themes from Oriental,

classical and literary history. Among his works are: *The Bohemian* (1878); *Hesperus and Other Poems* (1880); *The Vision of Nimrod* (1881); *The Vision of Esther* (1882); *The Love Poems of Louis Barnaval, by Charles De Kay* (1883).

DEK'KER, Thomas: English dramatist: b. in the latter part of the 16th c.; d. about 1638. He is said to have written upward of 20 plays, either wholly or in part. In company with Ben Jonson, he wrote for the Lord Admiral's Theatre; the two dramatists, however, afterward quarrelled. Dekker's chief plays are *Fortunatus, or the Wishing-cap*, and *The Honest Whore*. Hazlitt said of the latter that it unites 'the simplicity of prose with the graces of poetry.' His poetic diction is choice and elegant but he often wanders into absurdity.

De KOVEN, Henry Louis Reginald: Amer. composer; b. 1859, Ap. 3, in Middletown, Conn.; was grad. at Oxford Univ. 1879. He has composed many songs and several operas, include *The Begum; Don Quixote; Robin Hood;* etc.

De KOVEN, James: American Episcopal clergyman and educator; b. Middletown, Conn., 1831, Sept. 19; d. Racine, Wis., 1879, March 19. He was educated at Columbia College and at the General Theological Seminary in New York. After his ordination to the priesthood in 1855, he took a pastoral charge at Delafield, Wis., and at the same time became principal of the preparatory school for Nashotah Seminary, founded two years earlier. In 1859 this became Racine College, and De Koven its first warden. He soon acquired a marked influence throughout the West, both in educational and ecclesiastical matters, in the latter taking up and carrying forward the teachings of the Oxford Movement. His most prominent appearance in this connection was in the General Convention of 1871, at a time when the ritual controversy ran very high. When, however, in 1875, he was elected Bishop of Illinois, a considerable majority of the standing committees of the other dioceses refused to confirm his election, regarding his views as dangerous. He labored diligently for the upbuilding of Racine College, where he remained until his death. A volume of his sermons was published 1880.

DEL, *del* (*Artocarpus pubescens*): tree of the same genus with the bread-fruit (q.v.), indigenous to the forests of Ceylon, and valuable for its timber, which is used both for house-carpentry and for ship-building.

DE LA BECHE, *dĕh lâ bāsh*, Sir Henry Thomas: 1796-1855, Apr. 11; b. near London: geologist. He was educated at the military school at Great Marlow, and entered the army 1814. Three years later, he became a fellow of the Geological Soc., of which he was afterward secretary, and eventually pres., 1847. In 1823, in conjunction with the Rev. Mr. Conybeare, he issued a paper, *On the Discovery of a New Fossil Animal, forming a Link between the Ichthyosaurus and the Crocodile:* this was the Plesiosaurus. In 1824, De la Beche visited Jamaica and

applied himself to its geology, and in two years published a paper on that subject. On his return to England, he wrote a variety of scientific papers, among which are the following: *On the Excavation of Valleys, On the Geographical Distribution of Organic Remains,* and *Geological Manual* (1831). He then began a geological map of England, and the government approving his design, instituted the Geological Survey, and placed him at its head. In 1848, he received the honor of knighthood; in 1851, he published the *Geological Observer,* with upward of 300 wood-cuts; and in 1853, was elected a corresponding member of the Acad. of Sciences of Paris.

DELABECHEA, n. *dĕ-la-bāsh'ē-a* [named after the eminent geologist, *De la Beche*]: genus of *Sterculiaceæ. D. rupestris* is the bottle tree, which grows in the n. e. parts of Australia. The gum, which resembles tragacanth, is eaten by the natives in times of scarcity.

DELACROIX, *dĕh-lâ-krwâ'*, Ferdinand Victor Eugene: French painter, chief of the 'romantic school': 1799, Apr. 26—1863, Aug. 13; b. Charenton-Saint-Maurice, near Paris. At the age of 18, he entered the *atelier* of the artist Pierre Guérin. In 1822, he exhibited his first work, *Dante and Virgil.* It attracted much attention. The love of color, at the expense of accurate drawing, for which Delacroix afterward became conspicuous, is quite visible in it. It was highly praised, however, by M. Thiers among others. In 1824, Delacroix, then at the head of the new school of young painters, produced the *Massacre of Scio;* in 1826, the *Death of Marino Faliero,* and *Greece on the Ruins of Missolonghi;* in 1827, *Christ in the Garden of Gethsemane, Appearence of Mephistopheles to Faust, The Blind Milton Dictating Paradise Lost,* and the *Death of Sardanapalus;* and in 1828, *Cardinal Richelieu.* The July revolution left its impression on Delacroix, and in 1831 appeared his *Liberty directing the People on the Barricades.* About this time, he made a voyage to Morocco, where he familiarized himself with novel effects of light and costumes. The Paris Exhibition of 1852 contained the results of his artistic expedition. After this, his principal pictures were: the *Prisoner of Chillon* (1835); *Cleopatra* (1838); *Hamlet Contemplating the Skull of Yorick* (1838); *Capture of Constantinople by the Crusaders* (1841); a *Shipwreck* (1841), *Death of Marcus Aurelius* (1845); *Farewell of Romeo and Juliet* (1846); and *Flower and Fruits* (1849). Delacroix decorated many public buildings and churches. In 1857 he was chosen by the Institute to fill the place of Paul Delaroche (q.v.).—The most striking quality of Delacroix's genius is versatility. As a colorist, he ranks high, but is almost equally noted for incorrect drawing. His pictures are attractive, with a certain dramatic energy of execution, and brilliant effects of light and shadow. He has been compared to Paolo Veronese and Rubens, but is vastly inferior to both; he has been styled also the *Victor Hugo* of painting, a criticism which more nearly expresses the truth.

DELAFIELD, *dĕl'a-fēld*, EDWARD, M.D.: 1794-1875, Feb. 13; b. New York; bro. of John D. (q.v.). He graduated at Yale 1812, and at the N. Y. Coll. of Physicians and Surgeons, 1815—serving in the U. S. army as surgeon 1814 during the war with England. He visited Europe 1817, and studied in London under Astley Cooper and Abernethy. He returned to New York and was one of the founders of the New York Eye and Ear Infirmary. He was attached in an official capacity to the New York Hospital and Coll. of Physicians and Surgeons, and was a founder of the New York Ophthalmological Soc. In 1858 he was made pres. of the former of these institutions, and held that office until his death. He was connected with many other prominent med. bodies. His son, FRANCIS DELAFIELD, M.D. (b. 1841, Aug. 3), graduated at Yale 1860, and at the Coll. of Physicians and Surgeons 1863, and became an eminent physician and medical writer.

DEL'AFIELD, JOHN: banker: 1786, Jan. 22—1853, Oct. 22; b. New York; bro. of Maj. Gen. Richard Delafield (q.v.). He graduated at Columbia Coll. 1802, was a clerk and supercargo for a time, but was a shipping merchant on his own account 1808, and was driven into Corunna by a gale, and saw the French storm that city. He brought his ship safely to London, where he established himself in the banking business, and remained there till 1820, when he returned home. He settled in New York, and was cashier and pres. of the Phœnix bank 1820-38, when he accepted the presidency of the New York Banking Company, which eventually failed, leaving Delafield impoverished. He was deeply interested in literature and music, was the first pres. of the New York Philharmonic Soc., and a warm friend of the New York Hist. Soc. His father, JOHN DELAFIELD (1748-1824, b. England), established himself in New York as a merchant, was a founder of the insurance business, and director of the N. Y. branch of the U. S. bank.

DELAFIELD, *dĕl'a-fēld*, RICHARD, U.S.A.: 1798, Sep. 1—1873, Nov. 5; b. New York: engineer. He graduated at the U. S. Milit. Acad. at the head of his class 1818, was appointed 2d. lieut. of engineers, promoted 1st. lieut. 1820, capt. 1828, maj. 1838, lieut.col. 1861, col 1863, brig.gen. and chief of engineers 1864, and brevetted maj.gen. 1865, and was retired 1866. He was on surveying duty with the n. boundary commission 1818, employed in the construction of fortifications at Hampton Roads, on the Mississippi, Del. river and bay, New York harbor, and in Tex. 1819-38 and 1846-64, supt. of the U. S. Milit. Acad. 1838-45 and 1856-61, pres. of the milit. commission to the Crimea 1854-56, on the staff of Gov. Morgan of N. Y. 1861-63, commander of the corps of engineers and inspector of U. S. Milit. Acad. 1864-66, member of lighthouse board and of the commission for the improvement of Boston harbor 1864-70, and regent of the Smithsonian Institution 1865-70.

DELAGOA BAY, *dĕl-a-gō′a:* inlet on the s.e. coast of Africa, extending from 26° 20′ to 25° 30′ s. lat., and long. 33° e.; about 70 m. in length, 20 in breadth. Into Delagoa Bay many rivers fall, among which are the Delagoa, from the w., which gives its name to the bay; the Maputa, Tembe and Umbelosi (joining to form the English river), and the Umzati, the largest, in the s. For size and accommodation Delagoa Bay is the finest natural harbor in South Africa, although landing facilities are yet of a very primitive character. The settlement of Lourenzo Marquez and surrounding country have been notoriously unhealthy; but in 1887 the swamps behind the town were filled in, and in 1888 an elaborate system of drainage, and a long sea-wall, intended to reclaim the flat beach, on which decaying vegetable matter was deposited, were projected. Delagoa Bay was first discovered 1498 by Vasco da Gama (q.v.). The Portuguese founded a settlement at Lourenzo Marquez (q.v.) soon after, and remained in undisturbed possession of the coast till 1822, when the English claimed the country, alleging Portuguese abandonment. The Boers also laid claim to it, and in April, 1868, the Transvaal claimed by proclamation the Maputa river, from its junction with the Pongola to its embouchure into the southern part of Delagoa Bay. The matter was referred to the arbitration of Marshal MacMahon, who in 1875 declared the southern portion of Delagoa Bay, including the Maputa river up to the Lobombo Mountains, to belong to Portugal. The comparative proximity of Delagoa Bay to the newly-developed gold-fields of Eastern Transvaal and Swaziland brought to the front in South African politics the question of the desirability of Britain acquiring its possession by purchase. For over half a century there were intermittent attempts to establish communication between the Transvaal and Delagoa Bay. All failed, however, till 1887, when a company with an authorized capital of $3,000,000 was formed in London to work a concession from the Portuguese govt. for 90 years, for the construction of a railway from Delagoa Bay to the Transvaal frontier at the Komati Poort river, to which point it was opened in 1888. During the negotiations Portugal seized the line, and 1889, June 29, the Delagoa Bay R. R. Co. took steps to force compensation. The case was decided against Portugal. On 1895, July 8, the railroad was opened to Pretoria, and 1895, Nov., to Johannesburg. The extension of the line from the Portuguese frontier at Komati is owned by the Netherland So. Af. R. R. Co. Pretoria is 350 m. from the coast by rail, and Johannesburg, 400 m. The latter city is 1,013 m. from Cape Town by rail. The total length of the line is 382 m.

DELAINE, n. *dĕ-lān′* [F. *de*, from, *laine*, wool]: lady's dress-goods with a cotton chain, woolen filling, untwilled. It is dyed, figured in the loom, or printed. All-wool delaines are similar, excepting that the chain is of wool.

DELAMBRE, *dĕh-lŏng′b′r*, Jean Baptiste Joseph: 1749, Sep. 19—1822, Aug. 19; b. Amiens: French astrono-

mer. He studied first under Delisle, afterward under Lalande. The discovery of the planet Uranus, 1781, gave him the first opportunity of attracting the attention of the learned world in general. He formed tables of its motion, which obtained the annual prize of the Acad. of Sciences. Soon he commenced the construction of new solar tables, and later, tables of the motions of Jupiter and Saturn. With Méchain, he was appointed by the French govt., 1792, to measure the arc of the meridian between Dunkirk and Barcelona, which was completed 1799. Afterward, he was elected member of the Academy. In 1802, he was appointed inspector-gen. of education, and in 1803, perpetual sec. of the mathematical section of the Institute. The result of his measurements appeared in his great work, *Base du Système Métrique Décimal* (1806-10). In 1807, he obtained the chair at the College of France, vacant by the death of Lalande, his master and friend. In 1814, he was appointed a member of the council of public instruction. Delambre received a multitude of honors. He was a member of most of the learned bodies in Europe, an officer of the Legion of Honor, and a chevalier of the order of St. Michael. His writings are very numerous. The principal are: *Traite d'Astronomie* (Paris 1814); *Histoire de l'Astronomie du Moyen Age* (Paris 1819); *Histoire de l'Astronomie Moderne* (1821); and *Histoire de l'Astronomie au Dix-huitième Siècle* (Paris 1823-27), published under the care of Matthieu. Delambre wrote several excellent *Memoires*. He died at Paris.

DE LANCEY, *de-lăn'sĭ*, James: 1703, Nov. 27—1760, July 30; b. New York: lawyer. He was educated at Cambridge, England, and admitted to the bar at the Inner Temple, London. Returning to New York, he was appointed a member of the council 1729, second judge of the supreme court 1731, and chief justice 1733, and held the last office till death. He was commissioned lieut.gov. of the province 1747, presided over a congress to conciliate the Indians 1754, granted the charter of King's (now Columbia) College 1754, and was acting gov. from 1757 till his death.

DE LAN'CEY, James: 1732-1800; b. New York; eldest son of James De Lancey (1703-60). He was educated at Eton and Cambridge, Eng., and, returning to America, joined the army at the beginning of the French war of 1755, and commanded the force which took Fort Niagara 1755. He was also with Gen. Abercrombie at Ticonderoga 1758. In 1760, inheriting his father's estate, he became the richest man in America. He was a member of the N. Y. assembly 1768-75, and leader of the conservative party; drafted the remonstrance of the colonies presented in parliament by Edmund Burke, and visited England 1775 to influence the govt. in favor of the colonial cause, in which he was unsuccessful. When hostilities had begun he decided to remain abroad; and having thus taken position as a loyalist, his estates were confiscated. In 1788 he was chosen by the loyalists of New York to act as their

agent in obtaining from parliament compensation for their losses. He died in Bath, England.

DE LAN'CEY, William Heathcote, d.d., ll.d. 1797, Oct. 8—1865, Apr. 5; b. Mamaroneck, N. Y.: Prot. Episc. Bishop. He graduated at Yale College 1817, studied theol. with Bishop John Henry Hobart, was ordained deacon 1819 and priest 1822, appointed asst. to Bishop White of Philadelphia 1822, elected sec. of the diocesan convention of Penn. and also of the house of bps. 1823, was provost of the Univ. of Penn. 1827-33, asst. minister, St. Paul's Church, Philadelphia, 1833-36, rector 1836-39, and elected bp. of the newly organized Prot. Episc. diocese of Western N. Y. and consecrated at Auburn, 1839, May 7. In 1852 he visited London as delegate of the house of bps. to the anniversary celebration of the Soc. for the Propagation of the Gospel in foreign parts, and while there assisted in the services in St. Paul's and Westminster Abbey and at the consecration of an English bishop, both acts being the first on the part of an American bishop. He received the degree d.d. from Yale *College* 1827, and d.c.l. from the Univ. of Oxford 1852.

DELAND, *de-lănd'*, Margaret Wade (Campbell): American novelist: b. Allegheny City, Penn. 1857, Feb. 23; Having received a literary education at Pelham Priory, New Rochelle, N. Y., she entered the schools of the Cooper Union in New York for study of art and 1878-9 was employed in the Normal Coll., New York, as instructor in the art of industrial design. She married Lorin F. Deland, of Boston, 1880, and thereafter was a resident of that city. She published *The Old Garden, and Other Verses* (1886); *John Ward, Preacher* (1888), a work which had a very great success; *Sidney* (1890); *Story of a Child* (1892); *Mr. Tommy Dove, and Other Stories* (1893); *Philip and His Wife* (1894).

DELANE *de-lān'*, John Thaddeus: editor of the London *Times:* 1815-1879, Nov. 22; b. London; son of William Augustus Frederick Delane (1793-1857), for many years manager of the *Times*. He studied in a private seminary, first in England, afterward in France. He then went to Oxford, where he entered himself of Magdalen Hall. His father being manager of the *Times*, he was at a very early age introduced into the editor's room, and on the death of Mr. Barnes, 1841, succeeded to the direction. Under his editorship, the *Times* attained a prodigious circulation, and an influence unparalleled in the history of journalism. The division of labor in newspapers being more complete than in the days of his predecessors, the duty of the modern editor is not so much to write in his own journal, as to suggest topics to others; to revise and bring into harmony conflicting contributions; to make arrangements for the prompt and punctual supply of the news of the day (in which he is assisted by the manager); and before putting the journal to the press, to decide which of many competing articles and reports shall be

inserted, and which rejected or postponed. These duties require great tact, quickness of decision, extensive knowledge of men and things, literary taste and ability, and, in the case of a journal which claims to be the representative of the English nation, a ready discrimination of those straws on the surface which denote the ultimate direction of public feeling. He resigned the editorship 1877, after 36 years of continuous labor.

DEL'ANO, Columbus, American lawyer and politician: b. Shoreham, Vt., 1809, June 5; d. Mount Vernon, Ohio, 1896, Oct. 23. He studied law at Mount Vernon, was admitted to the bar in 1831, and shortly after elected prosecuting attorney of the county. He was elected member of Congress in 1844 and voted against the declaration of war in Mexico; he was again elected to Congress in 1864 and 1866. He was delegate to the Republican conventions of 1860 and 1864, and member of the State Legislature in 1863. In President Grant's first administration he was appointed commissioner of internal revenue, and reorganized the department, putting it on an excellent financial footing. In 1870 he became secretary of the interior, resigning in 1875, and retiring from public life. He was one of the trustees of Kenyon College and endowed its preparatory department.

DE LA RAMÉE, *déh lâ râ-mā*, Louisa (pen-name Ouida—child's pronunciation of Louisa): English novelist: b. Bury St. Edmunds, about 1840: there also some of her early years were spent. Soon after 1874 she left London and made her home in the neighborhood of Florence. While young, she contributed a novel to Colburn's *New Monthly:* it was pub. 1863 under the title *Held in Bondage;* and was followed in rapid succession by a long series of novels, including *Strathmore* (1865); *Chandos* (1866); *Under Two Flags* (her best, 1868); *Ariadne* (1877); *Wanda* (1883); and *Guilderoy* (1889). Ouida's merits and defects as a novelist, perhaps equally conspicuous, are strangely commingled. She has the faculty of vivid and forcible presentation, skilfully handles her materials, and shows a human sympathy. But her style is fantastic, her classical allusions are often pedantic and sometimes inaccurate; the pathos is strained; and the moral atmosphere not always wholesome.

DE LA REY, *dė la rā*, Jacob Hendrick: Boer general; b. Lichtenburg District of the Western Transvaal 1849. He gained distinction in his first command against the Basutos, when very young, and served two years in the Volksraad, supporting Joubert. He commanded the Lichtenburg burghers at the outbreak of the Boer-British war, 1899-1902, which force served later in Cronje's western column. He distinguished himself at Magersfontein; in the retreat before Lord Roberts, and at Nooitgidachet 1900, where he captured 500 English troops. He captured Lord Methuen 7 March, 1902, with many of his men, but released him on account of not being able

to treat his wounds, lacking hospital facilities; an instance of his noted humaneness. He served on the Boer committee which arranged for peace, and, later on the deputation visiting Europe and the United States to raise funds for the Boers that they might continue their occupations at home.

DE LA RIVE, *dė la rēv*, AUGUSTE: Swiss physicist; b. Geneva, 1801, Oct. 9; d. Marseilles, 1873, Nov. 28. He received the appointment to the chair of natural philosophy in the Academy at Geneva at the age of 22. First devoting himself to the study of the specific heat of gases, and of the observation of the temperature of the earth's crust, he soon turned his complete attention to electricity, making original discoveries in connection with magnetism, electrodynamics, the relation between magnetism and electricity, and the properties of the voltaic arc, and presenting new theories upon the subject of the aurora borealis. He discovered the process of electro-gilding, for which he received the grand prize of 3,000 francs from the Académie of Sciences 1842, becoming one of the eight foreign associates of the Académie, 1864. His chief work was a complete treatise on electricity in three volumes, which was translated into several languages, and was considered of the highest authority upon the subject.

DELAROCHE, *d'lâ-rosh'*, PAUL: historical painter, head of the modern 'Eclectic' school of art in France: 1797-1856, Nov. 4; b. Paris. He became a pupil of Baron Gros, and 1819-23 acquired some note by painting subjects from Scripture, but first excited public admiration, 1824, by his *St. Vincent de Paul preaching in the Presence of Louis XIII.*, and *Jeanne d'Arc interrogated in Prison by Cardinal Beaufort*. These show the earliest indications of that style for which he afterward became famous—a style which endeavored to unite the picturesqueness of the romantic with the dignity of the classic school of art. In 1826, Delaroche produced his *Death of President Durante;* and in 1827, his *Death of Queen Elizabeth*. These pictures greatly increased his reputation, though the last is reckoned a failure by English critics. In 1831, appeared his *Children of Edward IV. in the Tower*, a work of very high merit, but surpassed by his *Cromwell contemplating the Corpse of Charles I.* (1833), generally regarded as one of the first historical paintings of modern times. Both are well known through the medium of engravings. In 1834, appeared his *Execution of Lady Jane Grey;* and in 1837, his *Charles I. in the Guard-room Insulted by the Parliamentary Soldiers*, and his *Lord Strafford on the Way to Execution receiving the Blessing of Abp. Laud*. From this period until 1841, he was engaged on what is probably his grandest work—the series of paintings executed on the wall of the semicircular saloon of the École des Beaux Arts. This composition contains 74 figures, comprising the greatest sculptors, painters, and architects in all history, according to Delaroche's judgment. The style is simple, lofty, and chaste. Among his later works

are: *Bonaparte at St. Bernard* (1850), *Marie Antoinette before the Revolutionary Tribunal* (1851), *Moses Exposed* (1852), *Calvary* (1853), *Jesus in the Garden of Gethsemane* (1854), *The Girondins in the Concierge* (1856). The characteristic excellences of Delaroche are delicacy of treatment, picturesqueness of conception, harmony of color, and accuracy of drawing. He has been accused, however, of want of fire, imagination, and depth, and it must be admitted that he rarely, if ever, manifests the highest creative genius. Delaroche was named a member of the Institute in 1832, and prof. of painting in the École des Beaux Arts 1833.

DE LA RUE, Warren: English inventor and physicist; b. Island of Guernsey, 1815, Jan. 18; d. London, 1889, April 22. He was educated in Paris and followed his father's business, that of manufacturing paper wares. For this he invented many new processes and machines. He is best known for his application of photography to astronomy. He was a member of the International Electrical Congress at Paris in 1861, and president of the Royal Astronomical Society. His reports of original observations in chemistry, astronomy, and physics are of the greatest value.

DELAUNAY, *dĕh-lō-nā'*, Charles Eugene: 1816, Apr. 9—1872, Aug. 5; b. Lusigny, France: astronomer. He graduated at the Polytechnic School, Paris, as an engineer and with the first Laplace prize, 1835; was appointed tutor there 1841 and prof. of mechanics 1853; became a member of the Institute and the Acad. des Sciences 1855, and of the Royal Astronomical Soc. of London, 1869, from which he received a medal 1870, officer of the Legion of Honor, director of the national observatory, 1870, and prof. of astronomy and geology at the Polytechnic, 1871. He published several astronomical works, of which *Théorie du Mouvement de la Lune*, 2 vols. 4to (Paris 1866-7), is most noted.

DELAUNAY, Jules Elie, French figure and portrait painter: b. Nantes 1828, June 12; d. Paris 1891, Sep. 5. He received the Grand Prix de Rome in 1856; the first-class medal at the Paris Exposition of 1878; and at that of 1889 was awarded the medal of honor. He was made an officer of the Legion of Honor and a member of the Institute. His *Diana* is in the Luxembourg Gallery, Paris, and the *Death of the Centaur Nessus*, in the Museum at Nantes.

DELAUNAY, Louis Arséne, French actor: b. Paris 1826, March 21; d. Versailles 1903, Sep. 22. He made his debut in Oct. 1846, at the Odéon. In 1848 he acted at the Théâtre Français in the role of Durante, becoming secretary to the theatre in 1850. Till he retired (1887), he was one of the most accomplished actors on the French stage. He found some of his greatest parts in the plays of Hugo, Pailleron, De Musset, and Augiers.

DELAVAN, Wis., a city of Walworth co., near Delavan Lake, and on the Chicago, Milwaukee & St. Paul Railroad. It has some manufacturing interests, including dairies. It is the seat of the state institution for the education of the deaf; and on account of mineral springs in the vicinity and the lake is a place of summer resort and the site of a summer school. Pop (1910) 2,450.

DELAVAN, *dĕl'a-van*, Edward Cornelius: 1793-1871, Jan. 15; b. Schenectady co., N. Y.: reformer. He was a wine merchant in early life, acquired a large amount of real estate in Albany, erected the Delavan house, which was conducted many years as a temperance hotel, and was one of the founders of the State Temperance Soc., 1828. From that time he applied a large part of his time and wealth to that cause, speaking, writing, lecturing, conducting experiments, publishing a considerable amount of material in its interest, and chiefly supporting an aggressive periodical. He collected specimens of conchology and mineralogy, and presented cabinets valued at $30,000 to Union College, Schenectady.

DELAVIGNE, *d'lâ-vēñ'*, Jean François Casimir: 1793, Apr. 4—1843, Dec. 10; b. Havre: French poet and dramatic writer. He was educated at the Lycee Napoléon in Paris, where he attracted notice by his poem on the birth of the 'king of Rome' 1811. A few years after the fall of Napoleon, he published his *Messéniennes*, a series of patriotic elegies, in which he bitterly deplored the misfortunes brought upon his country by the disaster of Waterloo. The July revolution inspired his song *La Parisienne*, set to music by Auber, and he wrote several other revolutionary lyrics, such as *La Varsovienne, ou la Polonaise*, and *La Bruxelloise*. Many offers of employment in political affairs were made to him by Louis Philippe, but he chose to remain a *littérateur*, and worked assiduously at the composition of plays. His incessant labors at length undermined his health, and he retired to Lyon for change of air, where he died. Delavigne is, next to Béranger and Scribe, the most popular of recent French poets. He represents that 'golden mean' of the French Parnassus, the half-classic, half-romantic style of poetry. There is nothing extravagant, nothing profound about him. Easily comprehended, moderately liberal, with a slight tincture of skepticism and Voltairian wit, yet, on the whole, rather moral in his tendencies, Delavigne was just the man to charm the more elegant and decorous circles of Parisian society. His language, too, is piquant, picturesque, and select, and skilfully conceals the lack of poetic substance. The titles of his principal dramatic pieces are—*Les Vêpres Siciliennes* (1819), *Les Comédiens* (1820), *Marino Falieri* (1829), *Louis XI.* (1832), *Les Enfants d'Edouard* (1833), *Don Juan d'Autriche* (1835), and *La Fille du Cid* (1839). Several editions of his works have been published, the first in 1845, containing a biography of Delavigne by his brother Germain, and a panegyric by Sainte-Beuve.

DELAWARE.

DELAWARE, *dĕl'a-wār:* state, one of the 13 original states of the American Union; bet. lat. 38° 28′ and 39° 50′ n. and long. 75° and 46′ w.; bounded on the n. and n.n.w. by Penn., e. by D. river and bay and the Atlantic Ocean, s. and w. by Md.; area 1,960 sq. m.; extreme length 96 m., breadth at n. 36 m., at s. 10 m.; cap. Dover.

Topography and Geology.—The surface of D. in the main is level. There are no mountains. The n. has numerous hills and dales notable for picturesque scenery, and the s. a sandy table-land at no part exceeding 70 ft. in elevation, which forms the only watershed of the peninsula. There are many marshes and swamps in the s., of which the chief is the Cypress Swamp, 12 m. long, 6 m. wide, and abounding in valuable cypress, cedar, and other timber. The coast-line is dotted with salt marshes and lagoons; the interior has a light, rich soil adapted to general agricultural products and the cultivation of a large variety of fruits. Besides the D. river and bay the water-courses include the Choptank, Nanticoke, Pokomoke, Appoquinimink, Duck, Jones', Murderkill, Mispilion, Broadkill, and Indian rivers and Brandywine and Christiana creeks. The D. river and bay and Christiana creek are navigable for large steamers, and most of the others for only light-draught vessels. D. has three landlocked sounds, Rehoboth Bay, navigable for vessels drawing 6 ft. of water; Indian River Bay, and St. Martin's Bay. The chief harbors are Wilmington, Newcastle, and Lewes. At Lewes the U. S. govt. has constructed a notable breakwater nearly 3,000 ft. long, with an ice-breaker 1,500 ft. long, to afford a harbor of refuge for vessels, at a cost of $2,123,505. The n. portion of the state is of cretaceous formation, the central tertiary, and the s. post-tertiary or alluvial. Chalybeate waters abound in the n.; there is a deposit of kaoline of fine quality 2 m. long and ¾ m. wide; and bog-iron ore, greensand, and shell marl are found in paying quantities in various sections.

Climate.—The climate is mild and healthful, excepting in the region of the swamp, where intermittent and remittent fevers prevail. The temperature in the vicinity of the breakwater ranges from 30° to 38° F. in winter and 69° to 74° in summer, and the rainfall averages 50 inches.

Zoology.—D. is quite free from wild animals, though a considerable variety of reptiles, many very venomous, are found in the marshes and swamps, and the abundance of ducks, teal, and wild geese has made the shores of D. Bay a favorite resort for hunters.

Agriculture.—There are more than 10,000 farms in the State, comprising well over a million acres, most of which is improved land. The total value of all farm property, including land, buildings and improvements, implements and machinery and live stock, is more than $50,000,000. Outside of Wilmington agriculture forms the

principal industry. The region of the north produces cereals and hay, and that of the south fruits, berries, grapes and vegetables, the strawberry and peach crops being of especial importance.

Manufactures.—The manufacturing industries center about Wilmington, where all branches of iron and steel manufacturing are carried on to a great extent. The dressing and manufacture of leather is an important industry, Wilmington having one of the largest morocco plants in the world, while flour milling, the canning of fruits and vegetables, and the manufacture of fertilizers and powder also hold noteworthy places. In the powder works of the Du Ponts, on the Brandywine, D. has the oldest and largest establishment of the kind in the country. The oyster, shad and sturgeon fisheries are of large proportions, the catch being worth $250,000 annually.

Commerce and Transportation.—The development of the railway system has been comparatively slow, there being scarcely 400 miles of track in the State, and only about 10 street railways. The largest lines running through the State are the Pennsylvania and Baltimore and Ohio. Wilmington is a custom district and Lewes and Newcastle are ports of entry. The imports and exports average almost $100,000 a year.

Finance and Banking.—The unique situation of D. as regards the State debt is due to the manner of incurring debts there, either by the State or by municipalities. There are no State taxes on individuals, the receipts being from special taxes on banks, railroads, etc., fees, licenses, etc., and an inheritance tax. The total assessed valuation of the State in 1910 was $86,306,694, and the bonded debt $565,000. The building and loan association largely takes the place of the savings bank in D., although there are 2 mutual savings banks.

Religion.—Practically all denominations are represented, there being about 1,500 churches altogether. The Methodist Episcopal is numerically the strongest sect.

Education.—The public schools are supported by local taxes, a State distribution of the income fund and the proceeds of certain taxes, and an additional annual appropriation, fixed by the constitution at a minimum of $100,000. There are about 40,000 public school pupils and about 900 teachers. Private schools, coeducational colleges, colleges and universities for men only, are also conducted. The D. State College has an agricultural and mechanical department for white students and a normal department.

Charities and Corrections.—There is a State insane hospital, the Ferris Industrial School for Boys, and a public workhouse in Newcastle county. There are no institutions for the feeble-minded, deaf-mutes, or the blind, the statutes permitting their maintenance in suitable institutions in other States.

Illiteracy.—There are about 15,000 illiterates in the

State, of whom more than half are negroes, and of the balance about one-third foreign born.

History.—The state received its name from the bay and river. The former was discovered by Hendrick Hudson, 1609, accidentally visited by Lord De la Warr 1610, and settled by the Dutch near Lewes 1630, after a considerable purchase of land from the Indians the previous year. In 1633 the Indians destroyed the colony; in 1637 Swedes and Finns bought all the land between Cape Henlopen and Christiana Creek, built a fort, and founded the colony of New Sweden; the Dutch of New Amsterdam claimed the country by right of discovery, and built a fort at Newcastle; in 1654 the Swedes captured the Dutch fort; and in 1655 the Dutch captured the Swedish forts and expelled all colonists who refused to become subject to Holland. The Dutch remained in undisturbed possession till 1664, when a conflict arose between the Duke of York and Lord Baltimore for possession of the country on the w. side of the river excepting the parts already settled. When William Penn examined his grant of Penn., he became anxious also to possess all the territory w. of the D. river as far as the sea. Negotiations with the Duke of York resulted in his releasing to Penn all his title and claim to a tract 12 m. sq., in the centre of which was Newcastle, and also to the territory lying between this concession and the sea. Penn formally took possession of the country 1682, Oct., and when Lord Baltimore persisted in claiming the territory, Penn appealed to England, to the lords of trade and plantations, who decided in his favor 1685. Penn subsequently effected an amicable settlement with Lord Baltimore by a compromise. From 1685 till 1703 the territory was considered a part of Penn., and officially known as 'the counties of Newcastle, Kent, and Sussex, upon Delaware.' In the latter year the cos. were permitted a partial separation from Penn., and a district assembly, though they remained under the jurisdiction of the proprietary govs. of Penn. till the beginning of the revolutionary war. In 1776 the people organized an independent state govt., and adopted a constitution which was superseded 1792 by a second, and that, amended 1831, is still the fundamental law. D. was the first state to ratify the federal constitution, 1787, Dec. 7, bore an efficient part in the French and revolutionary wars; and in the Civil war, though a slave state, remained loyal to the Union, and furnished to the federal armies 7 regts. of infantry, one regt. of cavalry, and one battery, or 12,284 men—a greater number of soldiers in proportion to the population than was raised by any other state. When reconstruction began, however, the legislative majority sympathized with their class, and denounced the Fourteenth Amendment, which the new

constitution virtually abrogates. A long-standing controversy between D. and Penn., involving the possession of a triangular piece of territory about one m. sq. in area, along the crescent-shaped boundary line, has been settled through the aid of a joint boundary commission, whose findings were approved 1893, April 11. The old boundary stones gave the territory to Penn., but D. exercised jurisdiction over it. An attempt to rectify the line was made by the U. S. Coast and Geodetic Survey; but when a number of residents of D. found that they would be geographically in Penn., an opposition was developed which led to the appointment of a joint boundary commission. Owing to the inaccuracy of the original survey of 1701, no single curve could be made to pass through all the points agreed upon, but a compound curve of two arcs of nearly equal length was found to conform very closely to the line of 1703, and to follow the lines of existing holdings and jurisdictions in the two states as near as was believed to be practicable. On the approval of this finding, the new line was marked with permanent monuments. The leading element in the State politics since 1850 has been the 'peace Democrats,' devoted to the Union, but opposed to coercion of the States. The Democratic majority, however, has been always small, except in 1878, when the Republican party was temporarily ruined by joining the Greenback-Labor movement. This balance formed the basis of the effort for some years to win over Democrats enough to send John E. Addicks to the Senate, which resulted in depriving D. of one senator for some years and of both during the latter part of the struggle. In 1895 his rival was H. A. Du Pont; among the members of the legislature voting was the former speaker of the Senate, later governor through the death of Gov. Marvel; the Democrats and Populists declared his vote illegal, and refused to seat Du Pont. In 1896 the Republican State Convention to elect delegates to the St. Louis National Convention split and elected two sets. Du Pont and Addicks: the former were recognized as 'regular' by the St. Louis Committee on Credentials, and the other section called themselves Union Republicans. In 1899 a successor to Senator Gray was balloted for, but there was no election. In 1900 as in 1896 two sets of delegates went to Philadelphia, and this time the committee seated the Addicks party; though he was thus recognized as State party chief, the 1901 election for senator was again a stalemate, and as there were two to elect, the State was left entirely unrepresented in the Senate. In the session of 1903 Addicks nominally withdrew, and a coalition of the Regular and the Union Republicans elected two Senators, a Regular for the short term and a Union for the long term. In 1906, however, Addicks again attempted to obtain the Senatorship but was defeated on June 12 and Du Pont elected.

DELAWARE.

Government.—The executive authority is vested by the constitution in a gov., elected for 4 years and ineligible for a second term; the legislative in a general assembly comprising a senate of 17 members, 7 from Newcastle County and 5 from each of the other two, elected for 4 years, and a house of representatives of 35 members, 15 from Newcastle County and 10 from each of the other two, elected for 2 years. The members are paid $6 a day up to 60 days, after which they sit at their own expense; special sessions are thus limited to 30 days. The State officers are chosen for four years. The governor has a veto by items; his pardoning power is on recommendation of a board of pardons. The judiciary is composed of a supreme and superior court, a court of chancery, orphans' court, court of oyer and terminer, and registers' court; there are six judges,—a chancellor and five 'law judges,' of whom one is chief justice. They are appointed by the governor for 12 years, with the concurrence of the Senate. The state officers include sec. of state, treas., auditor, adj.gen., atty.gen., state librarian. No minister of the gospel can hold any civil office in the state. Minor crimes are punishable by the public pillory and whipping-post. The present constitution is of 1897; following the now usual Southern practice, it was not submitted to the people. The registration and educational provisions for the franchise enable the exclusion of all whom the governing classes think unfit. Provisions for revenue and impeachment are the same as in the national Constitution.

The successive govs. with their terms of office since 1789, when D. was first governed independently of Penn., are as follows:

Joshua Clayton.....1789-96	Thomas Stockton.....1844-6
Gunning Bedford.....1796-7	Joseph Maul (acting).....1846
Daniel Rogers.. 1797-8	William Temple..... .1846
Richard Basset.....1798-1801	William Thorp.....1846-51
James Sykes (acting).....1801-	William H. Ross 1851-5
David Hall 1802-5	Peter F. Causey.....1855-9
Nathaniel Mitchell.....1805-8	William Burton.....1859-63
George Truett.....1808-11	William Cannon 1863-5
Joseph Haslett.....1811-14	Gove Saulsbury.....1865-9
Daniel Rodney.....1814-17	James Ponder.....1868-75
John Clarke.....1817-20	John P. Cochran.....1875-9
Jacob Stout (acting).....1820-1	John W. Hall.....1879-83
John Collins.....821-2	Charles C. Stockley.....1883-7
Caleb Rodney (acting).....1822-3	Benjamin T. Biggs 1887-91
Joseph Haslett.....1823-4	Robert J. Reynolds 1991-95
Samuel Paynter.....1824-7	*Joshua H. Marvil.....1895
George Poindexter.... ...1827-30	William T. Watson..... 1895-97
David Hazzard.....1830-3	Ebe W. Tunnell..... ...1897-1901
Caleb P. Bennett.....1833-7	John Hunn 1901-1905
Cornelius P. Comegys.....1837-40	Preston Lea.....1905-1907
William B. Cooper.....1840-4	Simeon H. Pennewill.....1908-

*NOTE.—Gov. Marvil died soon after his inauguration.

For vote for president, see PRESIDENT AND VICE-PRESIDENT, ELECTIONS OF.

Counties, Cities, and Towns.—D. is divided into 3 counties, Newcastle, Sussex, and Kent. The counties are divided into 'hundreds' instead of townships, the

DELAWARE WATER GAP.

towns being included in the hundreds. The most populous cities are Wilmington 76,560; Newcastle 3,380; Dover 3,720; Milford 2,500; and Smyrna 2,168.

Population.—(1790) 59,094; (1800) 64,273; (1810) 72,674; (1820) 72,749; (1830) 76,748; (1840) 78,085; (1850) 91,532; (1860) 112,216; (1870) 125,015; (1880) 146,608; (1890) 168,493; (1910) 202,322.

DEL'AWARE: city, cap. Delaware co., O.; on the Olentangy river and Cleveland Cincinnati Chicago and St. Louis, the Pennsylvania and other railways; 24 m. n. of Columbus. It is regularly laid out and neatly built, contains a popular medicinal spring, and is the seat of O. Wesleyan Univ. (q.v.), and of O. Wesleyan Female College, organized 1863. The industries embrace large railroad repairing shops, several foundries and flour mills, machine shops, and manufactories of cordage, paper, crash, furniture, iron fences, lumber, and woolen goods. It has several schools, and two national banks with a capital of $200,000. Pop. (1910) 9,076.

DEL'AWARE Bay: estuary of Delaware river, abt. 60 m. in length; greatest width, 30 m. It is w. of N. J., and e. of Del., its entrance being between Cape May, N. J., and Cape Henlopen, Del. Numerous shoals make the navigation dangerous near the mouth, and there is no natural anchorage convenient, therefore an artificial harbor, known as the Delaware Breakwater has been formed at Cape Henlopen. The breakwater proper is 1,200 yards in length, and runs in a straight line from east-southeast to west-northwest, leaving an entrance 650 yards wide between its east end and the north point of the cape. It serves also as an ice-break against the floating ice which sometimes comes down the bay. At the distance of 350 yards from the upper or western end of the breakwater a similar dike, of 500 yards in length, is projected so as to form an angle of 146° 15′ with the breakwater. Government lighthouses are stationed at the entrance, to indicate shoal places in the channel.

DELAWARE College, an institution founded at Newark, Del., 1833, closed in 1859. In 1870 it was reopened as a 'Land Grant College;' the State of Delaware appropriating funds received under the Land Grant Act of 1862. Further aid received from the State funds obtained under the congressional act called the 'Hatch Bill,' enabled the college to open an experiment station in 1887. A still further grant was received under the act of 1890. The library contains about 14,000 volumes; the number of students enrolled is about 100.

DELAWARE INDIANS: tribe of N. American aborigines of the Algonquin family, calling themselves Lenni-Lenape, located formerly on the Delaware and Schuylkill rivers in Penn. They are supposed to have removed from the west, and were divided into three powerful families, known as the turtles, turkeys, and wolves, when the Dutch settlers entered into trading relations with them,

1613. They remained on friendly terms with the whites, and sold both Dutch and Swedes considerable tracts of land till 1632, when for some reason they destroyed the Dutch settlement of Swanendael. But this event does not appear to have caused more than a temporary cessation of trading relations. Other large tracts were bought by William Penn. Prior to 1740 they had formed a comparatively peaceful tribe. Then they alleged that the whites had defrauded them in their treaty, and, exhibiting an indisposition to vacate their territory, were forced by the Six Nations to do so, 1742. In their dispersion some went to Ohio, and others settled on the Susquehanna, Muskingum, and Alleghany rivers. Many of them served with Pontiac in the siege of Detroit, Fort Pitt, and other frontier posts, were totally defeated at Bushy Run, 1763, and made peace, 1764–5. During the revolutionary war the Delaware Indians were divided, one part serving with the British, the other signing a special treaty of loyalty to congress. A portion of the latter that had been Christianized by the Moravians formed a settlement on the Muskingum, called Gnadenhütten, and engaged in agricultural pursuits till 1781, when the neighborhood was occupied by the British, who removed them to Sandusky. Subsequently 90 of them, returning to gather their crops, were killed by the Americans, and then the rest removed to Canada. In 1785, '89 the Delaware Indians were guaranteed lands in Ohio between the Cuyahoga and Miami rivers, extending as far n. as Lake Erie, and tracts were reserved for the christianized families on the Muskingum. A few returned to the latter region, and others established the town of Fairfield, Canada. During the war of 1812 the tribe generally remained loyal to the govt.; in 1818, they ceded all their lands to the United States, the greater part removed to White River, Mo., and a few remained in Ohio; in 1853 they sold all the lands that had been granted them to the govt., excepting sufficient in Can. for a reservation; and during the civil war sent nearly all their able-bodied men to the Union army. By this time they numbered only 1,085. In 1866 the extension of the Pacific railroad cut through their reservation, and they again had to move, ultimately settling on a tract acquired from the Cherokees on the Verdigris and Cane rivers, Kan. A special treaty of 1866 permitted them to take lands in severalty and become citizens, they did so, and are not a 'tribe' any longer, though they form a part of the 'Cherokee Nation' in Indian Territory, numbering now 780. There are other bands, which in all make more than 780. They had three clans, the Turtle, Turkey, and Wolf or Munsee (q.v.); the latter, differing strongly from the rest, is in three divisions,—120 on the Thames in Canada, about 200 at Green Bay, Wis., with the Stockbridges, and some 50 with the Chippewa in Kansas. There are also 95 on the late Wichita reserve in Oklahoma, 135 on Grand River reserve in Ontario, and 350 Moravians on the Thames.

DELAWARE River: dividing N. Y. and N. J. from Penn. and Del. It rises in N. Y., on the w. slope of the Catskill Mountains, and flows in a generally southerly direction, forcing its way through the great Appalachian mountain chain, between almost perpendicular crags of more than 1,000 ft. in height, and gradually expanding into a broad estuary. With a course of fully 300 m., it is navigable for large ships to Philadelphia, and for steam-vessels to the head of tide-water at Trenton. The Delaware is connected by one canal with the Chesapeake Bay, and by two others with the Hudson river and along the w. side of the stream runs a similar work for 60 m. from Easton to Bristol. The Indian name of the river was Chickohocki.

DELAWARE WATER GAP: popular summer resort in Monroe co., Penn.; on the Delaware river, and the Delaware, Lackawanna and Western railroad; 4 m. s.e. of Stroudsburg, 57 m. s.s.e. of Scranton, 92 m. w. by n. of New York, 108 m. n. of Philadelphia. At this point the Delaware river finds a narrow passageway through the Kittatinny, or Blue Ridge, range of the Alleghany Mountains. The gap proper is the space between the almost precipitous sides of Mount Minsi on the Penn. side of the river, and Mount Tammany on the N. J. side. Both mounts rise to a height of 1,200 ft. above the water, have been rendered easy of ascent, and afford a vast and impressive panorama. The region for miles around abounds in natural attractions. There are several large hotels and boarding-houses between the railroad station and the summit of Kittatinny Mountain.

DE LA WARR, or DELAWARE, Thomas West, Lord: d. 1618, June 7; b. England: gov. and cap.gen. of Va. He succeeded to the title derived from the Gloucestershire estate of La Warre on the death of his father 1602, was appointed second gov. and first capt. gen. of the then immense province of Va. by royal charter 1609, May 23, and landed at Jamestown 1610, June 9. He remained with the colonists about a year, and during this period built a trading post on the site of the present Hampton, erected two forts at the mouth of the James river, and spent a large fortune for the benefit of the colony. While on his way to the West Indies his vessel was driven by storms into a large river, which was subsequently named the De La Warr in his honor. His administration was so wise and popular that in 1618 the colonists urged him to return to them, and while on his second voyage to Va. he died at sea; many historians believe that he was poisoned intentionally.

DELAY, v. *dĕ-lā'* [F. *délai*, delay—from L. *dilātus*, deferred, put off: comp. Gael. *dailich*, to delay]: to put off; to defer; to hinder for a time; to postpone; to protract; to linger; to hinder motion; N. a putting off; the time lost; hindrance of motion; procrastination. Delay'ing, imp. Delayed', pp. *-lād'*.—Syn. of 'delay, v.': to procrastinate; prolong; protract; retard; stop; detain; hinder; tarry.

DEL'BRÜCK, Martin Friedrich Rudolf von: German statesman; b. Berlin, 1817, April 16; d. there 1903. Entering public life in 1849 he was made director of the division of commerce and industry, and his part in detaching Prussia from the Austrian commercial policy was considerable. After 1862 Bismarck, then president of the cabinet, supported von Delbrück's commercial ideas, and upon the same principles he negotiated treaties with foreign powers. In 1867 Delbrück was made president of the imperial chancellory. Later he negotiated the treaties which made Germany a unit. For five years after the founding of the empire Delbrück retained his office as president of the general chancellory, now become the imperial chancellory. In 1876 he was dismissed in spite of his reputation and service. Later, as a member of the Reichstag, he dared oppose Bismarck. He retired from the Reichstag in 1881. He published *Der Zollverein und das Tabaksmonopol* (1857); *Der Artikel* 46 *der Reichsverfassung.*

DELCASSÉ, Theophile, *dĕl'kâs-sa tā'ō-fēl:* French statesman; b. at Pamiers, department of Ariège, 1852, Mar. 1. After leaving college, he became a journalist, and for some time was on the staff of *La République Française.* He was elected to the Chamber of Deputies for the department of Foix, in 1889, 1893, and 1898, became minister of the colonies in 1893, and in 1898 was appointed minister for foreign affairs in the Brisson cabinet, after its downfall, retaining that position under the Dupuy, the Waldeck-Rousseau, the Combes, and the Rouvier ministries. His career was distinguished by conspicuous success in the maintenance of cordial relations with the powers; tranquillity characterized his diplomatic treatment of those foreign complications which easily excited the volatile national temperament, and he guided to a satisfactory settlement the 'Fashoda Affair with England'; gave an eastern frontier to French possessions in Africa; and concluded a commercial convention with the United States. See British and French Colonial Agreement.

During the Russo-Japanese war his orders to French colonial officials in 1905 evinced a desire to maintain strict neutrality; and while upholding the alliance with Russia, he happily accomplished the delicate task of forming new ties of friendship with Japan's ally, Great Britain.

The difficulties of his position were increased by the German policy with regard to Morocco, and on April 21, 1905, he tendered his resignation as minister of foreign affairs; he was, however, prevailed upon to retain his portfolio, but further disagreement with the ministry over the Moroccan question, the internationalization of Abyssinian railways, and other affairs, led to his definite resignation and its acceptance, June 6, 1905.

DEL CREDERE COMMISSION, *dĕl krā'dā-rā* or *dĕl krĕ'dė-rĕ:* Italian phrase, borrowed by the law-merchant to

express the additional premium charged by a factor or agent, in virtue of which he warrants the solvency of the purchaser, and renders himself personally liable for the payment of the price of the goods sold. It is, in short, what is called a guaranty or warranty. If the percentage on the price for effecting the sales be two and a half, two and a half more is usually charged as del credere commission.

DELEBLE, a. *dĕl′ĕ-bl* [L. *delēbilĕ*, that may be destroyed] that may be blotted out.

DELEB′ PALM: tree of great importance to the inhabitants of the regions around Lake Tsad, and other parts of the interior and west of Africa, being in some districts the predominant tree, although very local in its distribution, through the vast tracts from Kordofan to the Atlantic. It is supposed to be nearly related to the Palmyra Palm (q.v.) of India (*Borassus flabelliformis*). Its fruit, when full grown, is 6–8 inches long, and 4 inches thick, yellowish-brown; the pulp a very close and coarse fibrous tissue. It has a mawkish taste; yet it is very much used by the natives of Africa, who also break the stone and plant it in the ground, when in a few days a blade shoots up, and a very tender root is produced, which is a pleasant and much used article of food.

DELÉCLUZE, *dė-lā-kluz*, Etienne Jean: French painter and critic; b. Paris, 1781, Feb. 20; d. Versailles, 1863, July 12. He was a pupil of David, and although achieving a fair success in painting he abandoned it for criticism 1816. He was connected with several reviews and papers, including the *Moniteur* and the *Journal des Débats*, and the *Revue des Deux Mondes*, being allied with the young literary circle of the Restoration. He also wrote several novels. Among his many works are: *History of Painting* (1828); *Mademoiselle Justine de Liron* (1832); *Life and Works of Leopold Robert* (1838); *Dona Olympia, the Sister-in-Law of Pope Innocent X.* (1842); *Gregory VII., St. Francis d'Assisi and St. Thomas Aquinas* (1844); *Louis David His School and His Times* (1855); and *Souvenirs of Sixty Years* (1862). In the museum at Versailles there are some curious pen-and-ink sketches by him of scenes of the invasion of Paris in 1814.

DELECTABLE, a. *dĕ-lĕk′tă-bl* [F. *délectable*—from L. *delectab′ĭlĭs*, delightful, agreeable (see Delight)]: highly pleasing; delightful. Delec′tably, ad. *-tă-blĭ*. Delec′tableness, n. *-bl-nĕs*. Delec′tabil′ity, n. *tă-bĭl′ĭ-tĭ*. Delectation, n. *dē′lĕk-tā′shŭn* [F.]: great pleasure or delight.

DELECTUS PERSONÆ, *dē-lĕk′tŭs pėr-sō′nē* [Lat., choice of the person]: some legal relations, an assumed choice of the person, for some qualification possessing value in the eyes of one of the parties to the contract, which person so chosen cannot transmit his rights and obligations to another without the consent of the other party to the contract. For obvious reasons this rule

usually holds in partnership; and unless in the case of great companies, where the sale of the stock is provided for, no new partner can be admitted if a single partner object to him. Even the executors and personal representatives of a partner do not succeed to his share. For the same reason, offices of trust are neither salable nor adjudgable for debt, though their emoluments may generally be attached for debt.

DELEGATE, n. *dĕl′ĕ-gāt* [L. *delēgātus*, sent away, intrusted—from *de*, *legārĕ*, to send as ambassador: It. *delegare:* F. *déléguer*]: one sent as a representative; a deputy; a commissioner; a member of a convention; title of members in the first continental congress of the American colonies, 1774; title of representatives in the U. S. congress from the territories, having seats and the right of taking part in discussion, but without vote: V. to send with power to transact business; to intrust; to commit to another's care. DEL′EGATING, imp. DEL′EGATED, pp. DEL′EGA′TION, n. *-gā′shŭn* [F.—L.]: one or more delegates appointed to discharge some particular duty; the act of investing with authority to act for another; in *civil law*, the act of a debtor with the creditor's consent, procuring another person to act as debtor in his place; in *common law*, the transfer of property from one person to another; for a principle operative in all such acts of delegation, see DELECTUS PERSONÆ.—SYN. of 'delegate, v.': to empower; commission; accredit; depute; assign; commit.

DEL′EGATES, COURT OF: formerly in England, the supreme court of appeal in ecclesiastical and maritime causes. Before the time of Henry VIII., the practice had gradually become established of taking ecclesiastical causes on appeal to the court of Rome. By 24 Hen. VIII. c. 12, this practice was abolished, and appeals were directed to be heard by the archbishops of the several provinces. By 25 Hen. VIII. c. 19, it was directed that appeals should finally be referred to the king in council, and his majesty was by the same statute empowered to issue a commission under the great seal to hear the appeals. The court thus established was called the court of delegates. It consisted in ordinary causes of a puisné judge from each of the common law courts, and three or more civilians. After sentence had been pronounced by the court of delegates, it was competent for the king to grant a commission of review; but this power was rarely exercised, except upon the ground of error in fact or in law. When application for review was made, it was usual to refer to the chancellor the memorial praying for review, and by him the expediency of granting the prayer of the petition was determined. By 2 and 3 Will. IV. c. 92, the court of delegates was abolished, and its jurisdiction was transferred to the king in council. And by 3 and 4 Will. IV. c. 41, and 6 and 7 Vict. c. 38, the sovereign is empowered to refer all appeals from ecclesiastical or other courts to the judicial committee of the privy council.

DELEGA'TION [Ital. *Delegazione*]: term formerly applied in Lombardy, Venice, and the States of the Church, both to the governing court of a province and to the province itself. Until the recent political changes in Italy, there were nine delegations in Lombardy, and eight in Venice, each presided over by a delegate, vice-delegate, and various subordinates. In the States of the Church, 1816, seventeen delegations were established, but the number was several times altered. The delegate was always a prelate directly appointed by the pope. If he was a cardinal, he was called a legate, and his province a legation. —*Delegados del fomento*, in Spain, the superintendents of the entire police administration of a province.

DELENDA EST CARTHAGO, phrase, *dē-lĕn'da ĕst kâr-thā'gō* [L., Carthage must be blotted out or destroyed]: the celebrated sentence with which Cato the elder was accustomed to conclude all his speeches in the Roman senate.

DE LEON, Edwin, American prose writer: b. Columbia, S. C., 1828; d. New York, 1891, Dec. 1. From 1854 to 1862 he was engaged in editorial work; from 1862 to 1870 held the office of United States consul-general and diplomatic agent at Cairo, Egypt. His published works include: *Thirty Years of My Life on Three Continents; The Khedive's Egypt*, a novel; *Askaros Kassis, the Capt;* and *Under the Star and Under the Crescent.*

DE LEON, Thomas Cooper: American author and playwright; b. Columbia, S. C., 1839, May 21. He was auditor Topographical Engineering Bureau, Washington, 1858–61, served in Confederate army 1861–5, and at the close of the war was connected with magazine and newspaper work in Baltimore, New York and Mobile. He organized the Mobile Mardi Gras Carnival and was its manager for 25 years, and has designed carnivals for many other cities for their various celebrations. Among his works are: *The Rock or the Rye; Creole and Puritan; A Fair Blockade Breaker; The Puritan's Daughter; Four Years in Rebel Capitals; Out of the Sulphur; A Bachelor's Box; An Innocent Cheat; Crag Nest; Life of Joseph Wheeler;* and *Confederate Memories.*

DELESCLUZE, *dĕh-lā-klüz'*, Louis Charles: 1809, Oct. 2—1871, May 28; b. Dreux, France: revolutionist. He imbibed radical ideas at an early age, was active in the republican movement 1830, and in the revolution 1848, was commissioner-gen. in the depts. Du Nord and Pas de Calais a short time, published several extremist newspapers in Paris, was transported to the island of Cayenne for 10 years 1857, but released by the amnesty, and founded the *Réveil* newspaper 1868. Under the Commune he was the head of the war commission, and opposed the govt. of national defense. He was killed on the barricades in Paris, and his death broke the resistance to the govt. troops.

DELESSERIA, n. *dĕ-lĕs-sēr'ĭ-a* [named after M. Benjamin *Delessert*, a French patron of botany]: genus of floride-

ous algæ, typical one of the sub-order *Delesserieæ*. DELESSERIE.E, sub-order of algæ, ord. *Ceramiaceæ* (rose-tangles).

DELESSERT, *dĕ-lĕs-sär*, BENJAMIN, French naturalist and philanthropist: b. 1773, Feb. 14; d. Paris, 1847, March 1. In 1803 he started cotton-spinning in France, but is particularly distinguished by his efforts to produce beet-root sugar. As early as 1801 he was engaged in refining, but in 1806 he began the experiments which were successfully terminated and announced to Chaptal on 1812, Jan. 2. When he heard of it Napoleon was in ecstasies: 'We must see it: let us go.' he said. 'Delessert,' says Flourens, who narrates this incident, 'had just time to go to Passy, where his work was. On his arrival he found the gates surrounded by the imperial chasseurs, who refused him admittance. He told them who he was and entered. The emperor had seen and admired everything; excitement was at its height. Approaching Delessert, the emperor took the cross of the Legion of Honor from his own breast and gave it to him. It was announced next day in the *Moniteur* 'that a revolution in French commerce had been accomplished.' Delessert lived through the collapse which the manufacture suffered after Napoleon's fall, and long enough to see it revive and become of the greatest importance.

DELETE, v. *dĕ-lēt'* [L. *delētus*, blotted out]: to blot out; to efface; to expunge. DELE'TING, imp. DELE'TED, pp. DELE'TION, n. *-lē'shŭn*, the act of blotting out or erasing.

DELETERIOUS, a. *dĕl'ĕ-tē'rĭ-ŭs* [Gr. *delētērĭŏs*, hurtful, destructive—from *dēlētēr*, a destroyer: F. *délétère*]: having the quality of injuring or destroying; destructive; injurious, pernicious. DEL'ETE'RIOUSLY, ad. *-lĭ*. DEL'-ETE'RIOUSNESS, n. the state of being injurious or pernicious.—SYN. of 'deleterious': noxious; hurtful; prejudicial; detrimental; injurious; destructive; poisonous.

DELF, n. *dĕlf*, or DELFT-WARE, n. *dĕlft-wär:* a kind of pottery originally manufactured at Delft, Holland, in the 14th c. It is now considered coarse, but was among the best of its day, being considered equal to the Italian in quality, but somewhat inferior in its ornamentation.

DELF, n. *dĕlf* [AS. *delfan*, to delve, to dig]: in *OE.*, a quarry; a mine; a deep ditch. In *heraldry*, a charge, representing a square sod or turf, the term being derived, it is supposed, from the verb to *delve* or dig. A delf tenné is the appropriate abatement for him who revokes his challenge, or otherwise goes from his word: see ABATEMENT.

DELFT, *dĕlft* or *dĕlf:* one of the most ancient towns of s. Holland, on the Schie, 8 m. n.w. of Rotterdam. It is intersected by numerous canals, over which are 69 bridges. Delft was formerly noted for its pottery (Delft-ware), but has now lost its reputation for this manufacture, and not more than 200 persons are engaged in the earthen-ware factories. Delft is a dull town, but has several interesting buildings, one of which, the town-hall, is picturesque and richly adorned. The New Church contains a monument,

more ornate than tasteful, to the memory of Prince William I. of Orange, assassinated here 1584, July 10. It contains also the tomb of Grotius, and the burial-vaults of the present royal family of Holland. The Old Church, a building of some note, contains the tomb of the naturalist Leeuwenhoek, and of the celebrated Admiral Tromp. Delft has also a state arsenal, a college where all matters connected with the management of the dikes are taught, a gymnasium, and infirmary. There are manufactures of woolen cloths and tobacco-pipes. Pop. (1901) 32,136.

DELFTSHAVEN, *dĕlfts-hâ'vĕn:* old town in s. Holland incorporated 1886 with Rotterdam. It is defended from floods by three strong dykes. The chief sources of wealth are distilling spirits, beer-brewing, iron-founding, ship-building, sawing wood, refining sugar, etc. From Delftshaven the company of English pilgrims from John Robinson's church at Leyden sailed in the *Speedwell*, a small ship which was to have accompanied the *Mayflower* to America, but instead transferred a portion of her passengers to that ship, at the port of Plymouth, England. Pop. 12,000.

DELGADA: see Ponté Delgada.

DEL'HI, N.Y.; village and county-seat of Delaware co., about 55 m. e. of Binghamton, on the Delaware river, and a branch of the N. Y., Ontario & Western R. It is in a rich agricultural section, and is regarded as one of the best dairying regions in the United States. Its trade is confined chiefly to farm products, butter, cheese, eggs, etc. Pop. (1910) 1,736.

DEL'HI (more correctly Dehli): executive district in the Punjab, formerly in the N. W. Provinces; area, 1,276 sq. m. The trade and manufactures centre in the town of Delhi. There is a branch of the E. Indian railway, and the Rajpootana State railway traverses the district for about 12 miles. Of about 900 sq. m. under cultivation, nearly a fourth are irrigated from government works, and a smaller part by private enterprise. To the s., the district is rocky and barren. The soil generally is sandy or rocky, and the most fertile portions are in the n. and n.w., watered by the Jumna. Pop. 608,850; three-fourths being Hindus; the remainder mainly Mohammedans and a few Sikhs, with upward of 2,000 Christians.

DELHI, *dĕl'lē* or *dĕl'hī'* (ancient name, *Indraprestha*, or *Inderput;* Mohammedan name, *Shahjehanabad*): celebrated city of n. India; 28° 39′ n. lat., and 77° 18′ e. long., cap. of the province and district of the same name; on an offset of the river Jumna, about a mile from the right bank of that river, and at an estimated elevation of 800 ft. above the level of the sea. The modern city was founded by Shah Jehan 1631, has a circumference of about seven miles. It is protected by ramparts, bastions, etc., and is entered by 11 gates. The greater number of the streets in Delhi are narrow, but the Chandni Chauk is an exception, being 90 ft. broad, and 1,500 yards in length, and intersected by

an aqueduct. The other principal street is 120 ft. wide, and one mile in length. Delhi has many monuments of former magnificence. The Mogul's palace was thought by Bishop Heber to surpass the Kremlin. The Jumna Musjid, or principal mosque, was commenced by Shah Jehan in the 4th year of his reign, and completed in the 10th, at a cost of $500,000. This magnificent building has been restored by the British government. The Delhi College was founded 1792, and in 1829 the sum of 170,000 rupees was bequeathed to it by a minister of the king of Oude. The interest of this sum, together with grants from government, raises its annual revenue to 40,580 rupees. For each of the languages, English, Arabic, Persian, and Sanskrit, there is a separate department. Delhi has railway communication, by the East Indian railway, with Calcutta, distant 1,019 m.; with Bombay, 870 m.; and with intermediate places. The mean temperature of the day has been ascertained, by observations extending over three years, to be: January, 56°; February, 61°; March, 72°; April, 83°; May, 91°; June, 92°; July, 86°; August, 83°; September, 83°; October, 77°; November, 65°; December, 58°. The vestiges of ancient Delhi, on the e. bank of the Jumna, consisting of ruined tombs, gardens, serais, and palaces, cover an area of about 30 m. in circumference, and present a remarkable scene of desolation. The modern city is noted for its needle-work, and here the shawls of cashmere are embroidered in silk and gold. The Delhi goldsmiths are famous for the delicacy and beauty of their work. Delhi was the capital of the Afghan or Patan, and afterward of the Mogul empire. It was taken by a British army under Lord Lake, 1803, Sep. 8, and has ever since—if we except the brief period when it was held by the mutineers in 1857—continued under British rule.

Delhi has been rendered memorable by the events of 1857. The march on the city of the mutineers from Meerut, the terrible events of May 11, the explosion of the powder magazine by Willoughby and his heroic band, the tragic scenes that followed; the siege, the assault (Sep. 14), when the city was won (Sep. 20) gate by gate and quarter, by quarter—a success shadowed by the death of the gallant Nicholson; the subsequent daring capture of the king of Delhi by Hodson of Hodson's Horse, and the capture and shooting of his miscreant sons by the same officer, are memorable events. Of late, the history of Delhi has been one of commercial prosperity. In 1877, it was the scene of the famous Durbar at which the queen of England was proclaimed empress of India. Pop. (1901) 208,575.

See Kaye's *History of the Sepoy War; Keene's Fall of the Moghul Empire;* the *Statistical Account of Delhi District;* and W. W. Hunter's *Imperial Gazetteer of India* (1881).

DE'LIA: festival of Apollo, held with great splendor in Delos, with musical and athletic contests.

DELIAC, n. *dē'lĭ-ăk* [from the island *Delos*]: a kind of sculptured vase; also, beautiful bronze and silver.

DELIBERATE, v. *dĕ-lĭb′ĕr-āt* [L. *delibĕrātus*, weighed well in one's mind—from *de*, *lībro*, I weigh or cause to swing: It. *deliberare:* F. *délibérer*]: to consider or examine; to balance in the mind; to weigh reasons for and against: Adj. slow in determining; slow in action; well advised or considered; cool; wary. Delib′erating, imp. Delib′erated, pp. Delib′erately, ad. *-lĭ*, with careful consideration. Delib′era′tion, n, *-ā′shŭn* [F.—L.]: the act of weighing and examining with care; discussion and particular examination of reasons for and against a measure. Delib′erateness, n. the quality of being deliberate; wariness; calm consideration. Delib′erative, a. *-tĭv*, having a right or power to deliberate or discuss. Delib′era′tively, ad. *-lĭ*.—Syn. of 'deliberate, v.': to consult; debate; ponder; weigh; consider; reflect; argue; discuss.

DELICACY, n. *dĕl′ĭ-kā-sĭ* [L. *delĭcĭæ*, pleasure, delight—from *delĭcātus*, charming, giving pleasure: It. *delicato;* F. *délicat*, delicate, delicious; *délice*, joy, pleasure—*lit.*, that which gives joy or pleasure to, as an appetizing morsel]: fineness of texture; a thing dainty and pleasant to the taste; elegance of feminine beauty in form or dress; a nice propriety in civility or politeness, proceeding from a desire to please; tenderness or consideration; tenderness of constitution; weakness. Del′icate, a. *-kāt* [L. *delĭcātus*, luxurious]: soft, smooth; of a fine texture; nice or pleasing to the taste; nice and discriminating in the perception of beauty or deformity; fine; slender; that must be tended or handled with care; effeminate; not able to endure hardship; not robust; feeble; scrupulously polite and considerate: N. in *OE.*, a nicety; a choice dainty. Del′icately, ad. *-lĭ*. Del′icateness, n. Delicious, a. *dĕ-lĭsh′ŭs* [OF. *delicieus;* F. *délicieux*, delicious—from mid. L. *delĭcĭōsus*, pleasant]: highly pleasing to the taste or other sense; very grateful; exquisitely delightful. Deli′ciously, ad. *-lĭ*. Deli′ciousness, n. the quality of being delicious.

DELICES, n. plu. *dĕl′ĭ-sēz* [F. *délices*, delights—from L. *delĭcĭæ*]: in *OE.*, delicacies.

DELICT, *de-lĭkt′*, in Law: offense committed with a positively malicious purpose, or an injury inflicted by culpable negligence of so gross a kind as to amount almost to crime. See Damages.

DELIGHT, v. *dĕ-līt′* [OE., *delit* and *deleit*, delight: Anglo-Norm. forms, *deliten*, to delight, to take pleasure; *delitable*, pleasant: OF. *deliter;* F. *délecter*, to delight—from L. *delectārĕ*, to delight; to please (see under Delicacy)]: to please highly; to give or afford high satisfaction; to have great pleasure in: N. a high degree of pleasure or satisfaction; that which gives great pleasure. Delight′ing, imp. Delight′ed, pp.: Adj. greatly pleased. Delight′ingly, ad. *-lĭ*. Delight′ful, a. *-fûl*, giving delight; highly pleasing. Delight′fully, ad. *-lĭ*, in a delightful manner; pleasantly. Delight′fulness, n. the state or

quality of being delightful. DELIGHT'SOME, a. *-sŭm*, very pleasing. DELIGHT'SOMELY, ad. *-lĭ*. DELIGHT'SOMENESS, n. the quality of being delightsome.—SYN. of 'delighted': pleased; glad; joyful; gratified;—of 'delightful': delicious; charming.

DELILAH, *de-lī'la* or *del'ĭ-la* [Heb., the languishing]: Philistine woman whom Samson loved. By her flattering blandishments, she obtained from him the secret that his divinely given strength depended on the condition that his locks should not be shorn; and having cut these off while he lay asleep, she then treacherously betrayed the strengthless warrior into the hands of his enemies.

DELILLE, *dĕh-lēl'*, JACQUES: 1738, June 22–1813, May 1; b. Aigues-Perse, in Auvergne: French poet. He received his education at the Collége de Lisieux, Paris, and was appointed to a professorship in Paris, at the Collége de la Marche. Here he published a translation of the *Georgics* of Virgil (1769), distinguished by its grace and elegance of style. It had an enthusiastic reception. In 1774, he published *Les Jardins*, with less success. The Comte d'Artois presented him with the abbey of St. Severin, or rather with its revenues, for he did not insist on Delille becoming a priest. His poem *L'Imagination* was written during a visit which he made to Constantinople 1784, in the suite of the French ambassador to the Ottoman court. On his return, he was elected prof. of *belles lettres* at the Univ. of Paris, and of Latin poetry at the College of France. At the revolution in 1789, he lost all his property. He afterward removed to Switzerland, where, 1800, he published *L'Homme des Champs*. In 1801, he visited London, published a translation of *Paradise Lost*, and returning to Paris, resumed his connection with the academy and the college there.

DELIMA, n. *dĕ-lī'ma* [L. *delimo*, I file off: so named because the leaves of some of the species are used for polishing]: genus of plants consisting of climbing shrubs, and belonging to the order *Dilleniaceæ*. DELIMEÆ, *dĕ-līm'ē-ē* tribe of plants belonging to the order *Dilleniaceæ*.

DELIMITATION, n. *dĕ-lĭm'ĭ-tā'shŭn* [F. *délimitation*—from *délimiter*, to fix boundaries—from mid. L. *delimitāre*]: the boundary-line of a country; the fixing the boundaries of a country, or countries, especially when a rearrangement of territory is to be effected.

DELINEATE, v. *dĕ-lĭn'ĭ-āt* [L. *delinĕātus*, sketched or marked out—from *de*, *linĕă*, a line: It. *delineare*]: to mark out with lines; to sketch or design; to represent in a picture; to draw a likeness of in words; to describe in words, as character. DELIN'EATING, imp. DELIN'EATED, pp. DELIN'EA'TOR, n. one who. DELIN'EA'TION, n. *-ā'shŭn* [F.—L.]: drawing an outline; a sketch; a description in words.

DELINQUENT, n. *dĕ-lĭng'kwĕnt* [F. *délinquant*, an offender—from L. *delinquens* or *delinquen'tem*, committing a fault—from *de*, *linquo*, I quit or forsake: It. *delinquente*]:

one who fails in performing his duty, particularly public duty; an offender; one who commits a fault or crime: ADJ. failing in duty. DELIN'QUENTLY, ad. *-lĭ*. DELIN'QUENCY, n. *-kwĕn-sĭ*, failure in duty; a fault; a misdeed; a crime.

DELIQUATE, v. *dĕl'ĭ-kwāt* [L. *deliquātus*, melted]: to melt; to be dissolved. DEL'IQUATING, imp. DEL'QUATED, pp.: ADJ. melted; dissolved. DEL'IQUA'TION, n. *-kwā'shŭn*, the act or state of melting.

DELIQUESCE, v. *dĕl'ĭ-kwĕs'* [L. *deliques'cĕrĕ*, to dissolve—from *de, liquērĕ*, to be fluid, to melt]: to dissolve or become liquid by attracting moisture from the air. DEL'IQUES'CING, imp. DEL'IQUESCED', pp. *-kwĕst'*. DEL'IQUES'CENT, a. *-kwĕs'ĕnt*, liquefying by contact with the air. DEL'IQUES'CENCE, n. *-sĕns*, melting or liquefying by absorbing moisture from the air.

DELIQUIUM, n. *dĕ-lĭk'wĭ-ŭm* [L. *deliquĭŭm*, want or defect: It. *deliquio*, a swoon]: in *chem.*, a melting in the air or in a moist place; a failure of power; a fainting.

DELIRIOUS, a. *dĕ-lĭr'ĭ-ŭs* [L. *delirĭŭm*, madness—from *de, lira*, the ridge between two furrows: It. *delirio:* F. *délire—lit.*, deviating from the furrow or straight line]: disordered in mind; raving. DELIR'IOUSLY, ad. *-lĭ*. DELIR'IOUSNESS, n. state of being delirious. DELIR'IUM, *-ŭm* [L.]: a wandering of the mind; a disorder of the intellect; temporary insanity caused by a diseased state of the body, as in fever.—SYN. of 'delirium': insanity; frenzy; madness, derangement; lunacy; aberration; mania; monomania; dementia.

DELIRIUM: disordered condition of mind characterized by intense, incoherent, and irregular flights of ideas, a confused consciousness, and (at times) excitement and passionate outbreaks. The character of the condition is largely determined by the inducing disorder and the personal disposition. The several forms of the delirium symptomatic of fevers (typhoid, scarlet fever, influenza, inflammatory conditions of special organs, notably of the brain and its enveloping and nourishing tissues) offer the common examples. The degree of rise in temperature (especially in children) inducing delirious ravings, is often characteristic of the temperament. In typhoid fever long sustained sequences of wild and dream-like plots and fancies of a mildly excited character are typical. The more severe and differently occasioned outbreaks of true insanity (the delirium of mania) represent the acute reactions of a mind possessed by hallucinations of fear and persecution, and in the extreme cases represent uncontrollable convulsive paroxysms of violence. An interesting type of delirium is that induced by the selective action of a poison upon the tissues of the nervous system. The best known example is that of alcoholism (q.v.) which in its acute type becomes delirium tremens, with its systematised and terrifying hallucinations and disorders of conduct. The milder delirium occasioned by hasheesh,

opium or mescal, or, again, in the inducing and recovering stages of anesthesia (by ether, nitrous oxide) are psychologically significant. (See PSYCHIC EFFECT OF DRUGS). The lighter stages of these reach over so closely into the realm of normal consciousness that the dreamer is partially or wholly aware of the subjective character of his visions. There occur also in disturbed forms of sleep, states transitional to mild delirium The older use of the term should be mentioned as referring to delusions in common forms of insanity: as the delirium of epilepsy, of grandeur, or mania without delirium. See DELUSION, HALLUCINATION.

DELIR'IUM EBRIO'SUM: form of acute mania, having intoxication for its exciting cause. It is often mistaken for Delirium Tremens (q.v.), and doubtless has frequently been dealt with as such in criminal cases. It originates either from a single fit of intoxication, or a short course of intemperance—frequently of periodical occurrence—in those who are mentally excitable from hereditary peculiarity of constitution, or from some previous injury of the head, and who may have experienced some cause for depression of spirits. It is marked by an uncontrollable desire for strong drink, which, when gratified, only leads to further imperious demands, until the drink itself is loathed, and sickness brings about recovery.

DELIR'IUM NERVO'SUM, or DELIRIUM TRAUMAT'ICUM: attack of delirium with tremors, which frequently supervenes on severe bodily injuries, such as gunshot wounds, burns, and fractures—occurring chiefly in large hospitals—in the case of persons of weakly constitution, who are irritable and nervous, and have been intemperate in their habits. It is usually a form of delirium tremens, the attack being precipitated by the shock of the injury.

DELIR'IUM TRE'MENS: disease originating from the abuse of alcoholic stimulants by those of a nervous and irritable temperament; characterized by a combination of delirium with muscular tremors. The tremors are general but chiefly of the hands, and of the tongue when protruded and the delirium is of a muttering, sight-seeing, bustling, abrupt, anxious, apprehensive kind. The individual affected cannot follow out a train of thought, explain an illusion or perverted sensation, or perform any act correctly; and though at one moment partially conscious and rational, is the next incoherent and excited by the most ridiculous fancies of a spectral kind, such as visitors in the shape of devils, cats, rats, and snakes, or by alarming occurrences, such as robberies, fires, and pursuits for crimes. All this is ushered in and attended by complete sleeplessness; and during the attack, if in uncomplicated form, there is no violence or ferocity of demeanor, though mischief to self or others may be done under false impressions. The patient is easily pleased by gentleness and indulgence, and fretted by restraint and opposition. The face has generally a pale dirty color

and an anxious expression. The eyes appear startled but lustreless, sometimes considerably suffused; the pupils are not contracted, unless the person is under the influence of opium, or when inflammation of the membranes of the brain is supervened; skin is warm and moist, often perspiring copiously; tongue sometimes loaded but generally pale, moist, and remarkably clean; there is little appetite but the patient will often take whatever is presented to him; thirst is by no means urgent, and there is seldom or never any craving for spirituous liquors; alvine evacuations, bilious and offensive; urine scanty, high-colored, and often albuminous; there is fever of 101° to 103°, and pulse is usually rapid and generally soft, but of various degrees of fulness and smallness. The precursory symptoms are not peculiar to or pathognomonic of this disease, but common to many other febrile affections implicating the functions of the sensorium, of the circulation, or of digestion; and the paroxysm —distinguished by the above phenomena—runs a remarkably uniform course, independently of age and constitution. In genuine uncomplicated cases—that is to say, when not precipitated by other illness, such as bronchitis, pneumonia, erysipelas, and fever; or some accident, such as contusions and fractures, (See DELIRIUM TRAUMATICUM) the paroxysm runs its course in from two to three days, and terminates in sleep, from which the individual usually awakens convalescent.

Delirium Tremens is a disease of nervous exhaustion or irritation, and is the result of a poisoning of the brain cells by alcohol. A single debauch will not cause it, for it comes only after the prolonged action of alcohol in the cells, such as occurs in habitual hard drinkers. The paroxysmal inebriate seldom suffers, but an attack may be brought on by the systemic shock caused by the sudden withdrawal of the accustomed stimulant. Any other shock, such as that of an acute disease like pneumonia or an injury, may act in the same way. The treatment should be directed to securing rest and sleep for the sufferer. Alcohol should be withheld, the stimulus to which the patient has become habituated being supplied temporarily, if necessary, by the aromatic spirit of ammonia. The heart is usually dangerously weak and must be supported by strychnine and in other ways. Sleep may be secured by the bromides combined (cautiously) with chloral, or by some other hypnotic. Opiates should be avoided.

It is necessary to support the strength by suitable nourishment, and to soothe the excited feelings of the patient. Actual restraint is seldom necessary, the only control required being ordinarily the presence of one or two judicious attendants, who will mildly but firmly interpose if the patient attempts anything which may tend to injure himself or others. The apartment in which the patient is confined should be well secured, for he may rush out at the door, or leap from a window, in the frenzy

of imagined danger The disease is dangerous because of the weakness of the heart, and for this reason the patient should always be under medical care.

DE LISLE, *deh-lēl'*, or *dė-līl'*, GUILLAUME: 1675, Feb. 28—1726, Jan 25; b. Paris: geographer. His father, Claude De Lisle, was a noted historian and geographer, and encouraged his son's study in that direction. Before he was 9 years old he had elaborated several remarkable charts from ancient history; and in 1700 he completed his great life work, the reformation of the geographical system current since the days of Ptolemy. In this he prepared maps of the entire known world, with careful corrections of the mistakes of his predecessors. An edition, improved by additions rather than corrections, was published 1724 He was elected a member of the Acad. des Sciences 1702, contributed several memoirs to its publications, became tutor in geography to Louis XV., and was appointed by him first geographer to the king, and pensioned 1718. Besides his maps, which numbered 134, he constructed a celestial and terrestrial globe, which attracted wide attention.

DELITESCENT, a. *dĕl'ĭ-tĕs'sĕnt* [L. *delites'cens*, or *delitescen'tem*, lying hid—from *de*, *lates'cens*, hiding one's self]: lying hid; concealed. DEL'ITES'CENCE, n. *-ĕns*, in *med.*, the period during which morbid poisons, as smallpox, lie hid in the system; concealment; sudden disappearance of inflammatory symptoms.

DELITSCH, *dā'lētsh* (named after the Slavonic *Deleczen*, anciently dominant there): town of Prussian Saxony, 15 m n. from Leipzig, with which it is connected by railway, on the right bank of the Lobber, a small river. It is an old but well-built town, and has manufactures of tobacco, woolen cloth, and hosiery. It is the capital of a circle, for the most part flat, but producing much corn and fruit. Pop. (1880) 8,225; (1890) 8,949.

DELITZSCH, *dā'lētsh*, FRANZ: German Hebraist and theologian: 1813, Feb. 23—1890, Mar. 4; b. Leipsic. Having studied theol. and Oriental literature in the univ. there 1842–46, he was prof. of theol. at Rostock 1846–50, at Erlangen 1850–67, and thereafter held a like chair at Leipsic. His writings are numerous and of very high authority. The fruit of his studies of Judæo-rabbinical literature is in his *Geschichte der Jüdischen Poesie* (1836), his *Beiträge zur Mittelalterlichen Scholastik unter Juden und Moslemen* (1841), and his *Jesus und Hillel* (3d ed. 1879). He wrote *Commentaries on Habakuk* (1843), the *Song of Songs* (1851), *Genesis* (4th ed. 1873), *Psalms* (4th ed. 1883), *Job* (2d ed. 1876), *Isaiah* (3d ed. 1879), *Proverbs* (1873), *Hebrews* (1857). He published, 1874, the philological work *Jesurum, Isagoge in Grammaticam et Lexicographiam Linguæ Hebraicæ*, in which he endeavors to show a relation between the Semitic and the Indo-European families of speech. His *Jüdisch-Arabische Poesien aus vormuhammedanischer Zeit* appeared 1874. Among his systematic

treatises are to be numbered: *Die Biblisch-prophetische Theologie* (1845); *Neue Untersuchungen über Entstehung und Anlage der Kanonischen Evangelien* (1853); *System der Biblischen Psychologie* (2d ed. 1861); *System der Christlichen Apologetik* (1869); etc. His translation of the New Testament into Hebrew (1877) is a masterly work.

DELITZSCH, Friedrich: German Assyriologist; b Erlangen, Bavaria, 1850, Sept. 5. He is a son of Franz Delitzsch (q.v.). He has published among other works: *Assyrian Studies* (1874); *Where is Paradise?* (1881); *Prolegomena of a New Hebrew and Aramaic Vocobulary to the Old Testament* (1886); *Assyrian Vocabulary* (1887 onward); *Assyrian Grammar* (1889); *Assyrisches Handworterbuch* (1894–6); *Das Babylonische Weltschöpfungsepos* (1896); and a translation of George Smith's *Chaldean Account of Genesis*. In 1877 he became extraordinary professor in Leipsic, ordinary professor at Breslau in 1893, and in 1899 professor of Assyriology in the University of Berlin.

DELIUS, *dā'lĭ-ŭs*, Nikolaus: author: 1813, Sep. 19—1888, Nov. 18; b. Bremen, Ger.; educated at the Bremen gymnasium and the universities of Bonn and Berlin. He settled in Bonn 1846, and was made prof. extraordinary in the univ. 1855, and full prof. 1865. He lectured on Sanskrit, and afterward occupied himself with Shakespeare and with Romance literature. He published *Radices Praccriticæ* (1839); edition of *Macbeth* (1841); edition of *Shakespeare's Works* (1854–61); *Saint Nicolas* (1850); *Provençalischen Liedern* (1853); and a *Treatise on the Sardinian Dialect of the* 13th *Century* (1868). He also contributed largely to periodicals on Shakespeare, and on the early literature of France. He achieved reputation as one of the most eminent Shakespeare scholars.

DELIVER, v. *dĕ-lĭv'ėr* [F. *délivrer*, to release—from L. *deliběrārĕ*—from L. *de*, *libĕro*, I free—from *liber*, free]: to set at liberty; to free; to save; to rescue; to give or transfer, as from one person to another; to utter; to pronounce; to surrender; to disburden or relieve of a child in childbirth. Deliv'ering, imp. Deliv'ered, pp. *-ėėd*. Deliv'erer, n *-ėr-ėr*, one who. Deliv'erable, a. *-ăbl*, that may be delivered. To deliver up, to surrender. To deliver over, to transfer; to pass into the hands of another. Deliv'erance, n. *-ăns* [F.—L.]: release from any kind of restraint; rescue from danger; in *OE.*, the act of bringing forth children; utterance. Deliv'ery, n. *-ĭ*, the act of delivering; release from restraint or danger; a passing from one to another, as goods; manner of speaking in public: childbirth, see Midwifery.—Syn. of 'deliver': to deliberate; release; surrender; transfer; commit; resign; communicate; utter; pronounce; impart; discharge; give forth.

DELL, n. *dĕl* [from *dale*—which see: old Dut. *delle*, a pool, a ditch: W. *twll*, a hole, a pit: Goth. and Dan. *dal*, a valley]: a small but deep narrow valley.

DELLA CRUSCAN SCHOOL, *dĕl'la krŭs'kan:* an affected and vapid style of English literary performance; also the company practicing it. About 1785, a number of English residents at Florence amused their lagging hours by writing verses, which they published under the title of *The Florence Miscellany.* The insipidity, affectation, and fantastic silliness of these productions were almost incredible; yet such was the poetic destitution of the period, that they soon found a crowd of admirers and imitators. Taking the name of an academy at Florence (see ACADEMY) the Della Cruscans now began to print their precious lucubrations in England, chiefly in two daily newspapers, *The World* and *The Oracle.* 'While the epidemic malady was spreading from fool to fool,' as Gifford pungently says, one of the brotherhood, a Mr. Robert Merry, came over from Florence, and 'immediately announced himself by a sonnet to Love.' It was answered by a certain Anna Matilda, who (as was the custom) praised it immoderately in language even more absurd than Merry's own. According to Gifford, 'the fever now turned to a frenzy: Laura, Maria, Carlos, Orlando, Adelaide, and a thousand other nameless names, caught the infection; and from one end of the kingdom to the other all was nonsense and Della Crusca.' Retribution, however, came (for Nemesis watches the course of poetry as well as of politics). In 1794 Gifford produced his *Baviad,* and in 1796 his *Mœviad.* Rarely has literature witnessed such a scalping. It ended the school, and, indeed, it is only in these two poems that the memory of most of the Della Cruscan songsters has been preserved.

DELLYS, *dĕl-lēz':* seaport town of Algeria, 49 m. e. of Algiers. The French part has wide streets, and a square planted with trees. The Arab part, greatly more populous, retains its old character; its streets are narrow and tortuous. The climate of Dellys is reckoned very salubrious. The vine and the olive thrive in the neighborhood. *Bechena,* a kind of sorghum or durra, is grown. There is a trade in grain, oil, and salt. Pop. of town, 4,000; of commune, 10,000.

DELMAR, ALEXANDER: American political economist; b. New York, 1836, Aug. 9. He established the *Social Science Review* and was its editor in 1864–6. He is the author of *Gold Money,* and *Paper Money* (1862); *Essays on Political Economy* (1865); *Letter on the Finances* (1868); *History of Money in Ancient Countries* (1884); *The Science of Money; The National Banking System; Statistical Almanac; The History of Money in America* (1899); etc.

DELOLME, *dĕh-lōlm',* JEAN LOUIS: 1740–1806, June 16; b. Geneva: originally an advocate in his native town, but by certain political disturbances there, in which he had shared, he was forced to leave it. He went to England, where he lived several years in great poverty. He returned to his native country 1775, and died at a village in Switzerland. Delolme's principal work is *Constitution de l'Angle-*

terre, ou Etat du Gouvernement Anglais comparé avec la Forme Républicaine et avec les austres Monarchies de l'Europe (Amsterdam 1771); English translation by the author (Lond. 1772). In 1772, he published in English, *Parallel between the English Government and the former Government of Sweden;* ten years later, his *History of the Flagellants, or Memorials of Human Superstition;* and 1796, *Essay containing Strictures on the Union of Scotland with England.*

DE LOME, *dē-lōm,* ENRIQUE DUPUY: Spanish diplomatist; b. Valencia, Spain, 1851, Aug.; d. Paris, France, 1904, July. He became first secretary of the Spanish legation in Washington in 1882, and minister to the United States in 1892 and 1895. In February 1898 it was discovered that he had written a letter to Señor Canalejas, a Spaniard of high rank who had been in the United States a short time previous supposably to make observations for the Spanish government. The letter, which followed Canalejas to Havana, and was probably abstracted from his apartments there by some friend of the insurgents, contained disparaging phrases regarding the President of the United States, and otherwise plainly showed that neither the writer nor the recipient of it believed that Spain was acting in good faith with the United States government. De Lome at first denied the genuineness of the letter, but it was proved beyond a doubt that he was the author, and he telegraphed his resignation to Madrid on Feb. 9.

DELOMORPHOUS, a. *dē'lō-mŏrf'ŭs* [Gr. *dēlos,* plain; *morphē,* form]: applied to certain cells in the glands of the stomach, larger and more distinct than those among which they lie.

DE LONG, GEORGE WASHINGTON, U.S.N.: 1844, Aug. 22—1881, Oct. 30; b. New York: Arctic explorer. He graduated at the U. S. Naval Acad. 1865, was promoted ensign, 1866, master 1868, lieut. 1869, and lieut. commander 1879. He was attached to the *Juniata* during her voyage to the Arctic regions in search of the *Polaris,* 1873, appointed to command the exploring expedition fitted out by James Gordon Bennett, and sailed in the *Jeannette* from San Francisco 1879, July 8. The vessel was caught in pack-ice Sep. 5, and after drifting over 600 m. was crushed in lat. 77° 15′ n. long. 155° 50′ e, 1881, June 13. The commander, surgeon Ambler, and 13 of the crew were found dead, with all the records of the expedition and a diary written up to 1881, Oct. 30, at the delta of the Lena river, Siberia, 1882, March.

DELORME, *dĕh-lorm′,* MARION; abt. 1612–abt. 1651; b. at a village near Châlons-sur-Marne, and came early to Paris, where her great beauty would easily have opened to her a good marriage, had she not been inclined to a life of licentious intrigue. Almost all the distinguished men of the age were her 'lovers.' During the first disturbances of the *Frondeurs,* her house was the rallying-point of the chiefs of that party, and in consequence, Mazarin was

about to imprison her, when she suddenly died. A remarkable tradition sprang up in France during the next century, to the effect that Marion had *not* died, but escaped to London; that she had returned to Paris 1682; that she, meanwhile, had been thrice married—first, to a lord, second, to a robber chief, and third, to a procurator of finance; and, finally, that she died 1706, or, as others say, 1741, in her 129th year. Victor Hugo has made her the subject of one of his historical dramas.

DE L'ORME, PHILIBERT: French architect; b. Lyons 1515; d. Paris 1570, Jan. 8. He studied in Rome, aided by Cardinal de Ste. Croix, and became the favorite architect of Henry II. and Diane de Poitiers. On the death of Henry II. he remained in disfavor for some time. He began the Tuileries for Catharine de Medici. The Château d'Anet, begun in 1552, is one of his chief works. He wrote two books which were long a high authority on architecture.

DELORME, PIERRE CLAUDE FRANÇOIS: French genre painter; b. Pâris 1783, July 28; d. there 1859, Nov. 8. He was a pupil and imitator of Girodet. Among his works are: *Death of Abel* (1810); *Hero and Leander* (1814); *Raising of Jairus' Daughter* (1817), in Church of St. Roch, Paris; *Christ Reappearing* (1819), in Notre Dame, Paris; *Cephalus Carried Off by Aurora* (1882), in the Luxembourg; *Hector Reproaching Paris* (1824); *Sappho Reciting an Ode to Phaon* (1833); *Eve Plucking the Forbidden Fruit* (1834); *Magdalen at the Sepulchre* (1835); *Adam and Eve After the Fall* (1839); *Holy Family in Egypt* (1850).

DELORT, CHARLES EDOUARD: French painter; b. Nîmes 1841, Feb. 4; d. 1895, March 10. He was a pupil of Gleyre and of Gérôme. Among his works are: *Daphnis and Chloe; The Stolen Cattle* (1866); *Museum of Nîmes; Confidence; Starting for the Chase* (1873); *Marauders* (1874); *Embarking of Manon Lescaut* (1875); *After Breakfast* (1876); *A Poacher; Admonition* (1880); *Capture of the Dutch Fleet by the Hussars of the French Republic* (1882); and *Return from Exile* (1889).

DELOS, *dē'lŏs* (called also in ancient times Asteria, Ortygia, Cynthus, etc.): island in the Grecian Archipelago, smallest of the Cyclades; situated between the islands Rheneia and Mykonus; lat, about 37° 23′ n., and long. 25° 17′ e. According to the mythological account, it was at first a floating island, but was fixed to the bottom by Zeus, in order that it might become a safe abode to Leto, who, about to bring forth Apollo and Diana, was seeking a refuge from the wrath of Hera. Its earliest historical inhabitants were Ionians, and it appears to have been the centre of a great periodical festival held in honor of Apollo, both on the mainland and in the islands (see DEDIA). In B.C. 426 Delos was purified by the Athenians, all the tombs were removed from it, and it was declared pollution for any birth or death to take place on it. Four years afterward the inhabitants of Athens expelled the Delians from

the island. After B.C. 146, when Corinth fell, Delos became the seat of extensive commerce. Its sacred associations, its great festival, its excellent harbor, and its situation in the direct route from s. Europe to the coasts of Asia, combined to give it favor with merchants. So great was the traffic of Delos, that it is said 10,000 slaves changed hands here in one day. After flourishing for a considerable time, it was devastated in the Mithridatic war, and never recovered. Pliny describes Delos as being merely a rock, only 5 m. in circumference. It was noted for its palm-trees, and also for its brass, and the brazen vessels which it manufactured. The town of Delos, which stood at the foot of Mount Cynthus, a granite crag 400 to 500 feet high, is now a mass of ruins. Still, however, the remains of the great temple of Apollo, and of the colossal statue raised in his honor, may be distinctly traced, though shiploads of the more perfect architectural fragments were conveyed, centuries ago, to Venice and Constantinople. A few shepherds and goatherds from Mykonus are now the only inhabitants of Delos.

DELPHI, *dĕl′fī* (now CASTRI): ancient town of Phocis, Greece, famous for its oracle of Apollo; about eight m. n. of an indentation in the n. shore of the Gulf of Lepanto (Corinthian Gulf), at the s. base of Parnassus; lat. 38° 27′ n., and long. 22° 37′ e. Its original name, and that by which Homer invariably speaks of it, was Pytho. It stood in the centre of a district renowned for classical associations. Occupying the vale of the Pleistus, it was seated in a semicircle like the area of a grand natural theatre, backed toward the n. by two lateral spurs of Parnassus. These lateral ranges extend e. and w. around Delos, and give rise also, from the point at which they approximate, to the famous fountain of Castalia, the holy water of the Delphian temple. The earliest inhabitants of Delphi are said to have come from Lycoreia, a town on one of the slopes of Parnassus, the inhabitants of which are supposed to have been Dorians. From the Delphian nobles were at first taken the chief magistrates and the priests of the temple, while the Pythia or female who delivered the oracle, at first a young maiden, latterly a woman, of not less than fifty years, was usually selected from some family of poor country-people. In the centre of the temple was a small opening in the ground whence arose an intoxicating vapor; and the Pythia having breathed this, sat down upon the tripod or three-legged seat, which was placed over the chasm in the ground, and thence delivered the oracle, which if not pronounced at first in hexameters, was handed over to a poet, employed for the purpose, who converted it into that form of verse. As the celebrity of the Delphic oracle increased, Delphi became a town of great wealth and importance. In the 8th c. before Christ, it had become famous not only in Hellas, but also among the neighboring nations. Here the Pythian games were first celebrated B.C. 586. The first stone temple at Delphi, built by Trophonius and Agamedes, was destroyed by

fire B.C. 548, but was rebuilt at the cost of 300 talents ($575,000) and was fronted with Parian marble. In B.C. 480 Xerxes sent a portion of his army to plunder the temple but as they climbed the rugged path that led to the shrine, a peal of thunder broke overhead, and two huge crags tumbling from the heights crushed many of the Persians to death, while the others, struck with terror, turned and fled. It was plundered by the Phocians during the Sacred War, and was attacked by the Gauls B.C. 279, who, approaching by that route which the Persians had on a former occasion adopted, were repulsed by a similar (reputedly) supernatural agency. Delphi subsequently excited the rapacity of many potentates, and suffered severely by their attacks. Nero carried off from it 500 statues in bronze; Constantine also removed many of its works of art to his own capital. In the time of Pliny, the number of statues in Delphi was not less than 3,000, and within the temple for a long time stood a golden statue of Apollo.

The modern town of Castri now occupies the site of Delphi. Its situation is beautiful, and from it the traveller has an excellent view of the ancient valley. Castri stands in the immediate neighborhood of the source of the still flowing Castalian spring.

DELPHIAN, a. *dĕl′fĭ-ăn*, or DEL′PHIC, a. *-fĭk* [*Delphi*, a town in Greece]: pertaining to Delphi, or to the celebrated oracle of that place.

DELPHINAPTERA, *dĕl-fĭn-ăp′tē-râ:* a genus of *Cetacea*, of the family *Delphinidæ*, agreeing with *Beluga* (q.v.) in the want of a dorsal fin, but differing in having the snout producted into a slender beak, which is flattened transversely, and separated from the head by a marked furrow. *D. Peronii*, the RIGHT WHALE-PORPOISE of the South Sea whalers, is an inhabitant chiefly of the seas of far southern latitudes, but sometimes found even on the coasts of New Guinea. It is about five or six ft. long, black, with brilliantly white belly and snout. Its mouth is furnished with a great number of slender sharp teeth. *D. Commersonii*, also in far southern latitudes, is about the size of a porpoise, silvery white; the snout, tail, and pectorals tipped with black, and is described as one of the most beautiful inhabitants of the ocean. *D. borealis* was discovered by the U. S. Exploring Expedition in the n. Pacific Ocean.

DELPHINE, or DELPHIN, a. *dĕl′fĭn* [L. *delphīnus*, a. dolphin, a constellation of stars]: pertaining, to a dolphin. DELPHIN CLASSICS, edition of the Greek and Roman classics, prepared by 39 of the best scholars of the time, under the editorship of Bossuet and Huet, tutors to the Dauphin (q.v.), son of Louis XIV. The title-pages bear the words, *In usum Serenissimi Delphini;* hence the name. They have never been reprinted *as a whole* in English, but octavo editions of particular authors, such as Virgil and Horace, have been published for the use of schools. They have little value in the eye of a scholar of the present day.

DELPHINIA, *dĕl-fĭn'ĭ-â:* annual festival of Apollo, at Athens where the god had the name Delphinios. Very little is known of it beyond the fact that girls carrying branches of trees went in procession to the temple.

DELPHIN'IDÆ, AND DELPHI'NUS: see DOLPHIN.

DELPHIN'IUM: see LARKSPUR.

DELPHINORHYNCHUS, *dĕl-fī-no-rĭng'kŭs.* genus of cetacea of the family *Delphinidæ*, having one dorsal fin like the true dolphins, but the beak not distinguished from the forehead by a furrow. *D. Bredanensis*, or *D. rostratus*, a species about eight ft. long, black above and reddish below, has been thrown ashore on the French Atlantic coast. A much larger species, *D. coronatus*, attaining the length of 30-36 ft., is described as one of the whales of high n. latitudes, having been seen in numerous flocks among the ice-islands near Spitzbergen.

DELSARTE, *dĕl-sârt'*, FRANÇOIS ALEXANDRE NICOLAS CHEERI: 1811, Dec. 19—1871, July 19; b. Solesmes, France: educatior. His father, a physician, sent him to Paris to study with a painter on china 1822, but he soon tired of this occupation and entered the Conservatory 1825. He attained distinction as a tenor singer in the Opera Comique, suddenly lost his voice, and thereafter applied himself to musical and dramatic instruction, having among his pupils many who afterward achieved operatic and dramatic celebrity. He was author of several melodies and romances, but his chief work was the elaboration of a system of dramatic expression by which the voice and the entire action of the body were trained by fixed rules. He aimed to make elocution a science. His system, at least in part, has of late been gaining adherents among elocutionists in this country.

DELSARTE SYSTEM: a theory and method of natural and artistic expression; in the narrower and more usual signification of the phrase, a system of calisthenics: its author was François Alexandre Nicolas Cheri Delsarte (q.v.). Delsarte's basic idea was that as there are in the human being three 'principles'—life, soul, and mind—so human expression must consist of three elements—a 'trinity.' 'Art,' says Delsarte, 'is at once the knowledge, the possession, and the free direction of the agents whereby are revealed the life, the mind, and the soul.' According to Delsarte, the general physical tone, the attitudes, and the gestures of the individual are but the outward expression of inward conditions; and, conversely, in virtue of the law of reflex action these outward actions or bodily states influence the inner man. 'To each spiritual function responds a function of the body; to each great function of the body corresponds a spiritual act.' As generally understood and practiced, the Delsarte System is merely a calisthenic physical culture. As such, its aim is to bring the body in all its action, in its every attitude and gesture, into conformity with an assumed ideal of bodily perfection. Delsarteans postulate a 'desire of nature' and a

'natural tendency of civilization' to make less prominent 'the chin, the abdomen, and the feet,' but to bring forward the 'superior top brain and the chest.' Those retreating organs are the 'less noble'; any tendency on their part to assume prominence in the body's contour must be suppressed: on the other hand the thorax must lead and the head must follow as closely as may be, and all other parts of the body must be held subordinate to those noble divisions or zones. 'In searching, then, for the eternal type of the perfect human organism,' writes an exponent of the Delsarte System, 'we find that the larger the cage [thorax] in which the lungs dwell (up to a certain point), the more shall we be enabled to evolve a higher nature, provided the brain has capacity for development in the same direction.' Exercises are prescribed under the Delsarte System for developing the thoracic region; for acquiring and maintaining habitually the true natural attitudes of the body and its several parts as ascertained by a study of the anatomy and physiology of the human organism; for rendering the articulation supple, the muscles at once pliant, firm, and quickly responsive to the slightest impulsions or intimations from the life, soul, and mind, the trinity within; and for correcting faulty, awkward, or unphysiological bodily action or gesture.

DELTA, n. *dĕl′tă* [the name of the Gr. letter Δ or δ, Eng. D.]: a name applied by the Greeks to the alluvial deposit at the mouth of the Nile, from its shape resembling Δ; any alluvial tract of land between the diverging mouths of a river. DEL′TIC, a. *-tĭk*, of or pertaining to a delta. DEL′TOID, a. *-toyd* [Gr. *eidos*, shape]: in the form of Δ; resembling a delta; triangular: N. the great muscle of the shoulder.

DEL′TA: alluvial deposit at the mouth of a river from the deposition of the particles which it has held in suspension. This deposit usually causes the division of the river into several mouths of which the most remote are sometimes hundreds of miles apart where they enter the sea. The Ganges delta has a base line on the sea of abt. 200 m.; and its two sides have abt. the same length. The formation of deltas depends more upon the presence or absence of currents in the ocean at the mouth of the river than, upon the quantity of sediment held in suspension when it reaches the sea. Deltas are consequently of almost invariable occurrence in inland lakes, in the quiet estuaries of the nearly tideless Mediterranean, and in the sheltered bays and gulfs of other seas. When on the other hand, there are strong ebb-tides, or powerful oceanic currents, the detritus is carried off into the sea.

DEL′TA MET′AL: valuable alloy, of the same ingredients as brass, with the addition of iron. It is very hard, does not rust readily, and may be both wrought and cast. It has been used in shipbuilding with advantage.

DELTOHEDRON, n. *dĕl-to-hē′drăn* [Gr. *delto*, the form *delta* takes when the first element in a compound, and

hedra, a seat, a base]: a solid, the surface of which is formed by 24 deltoids.

DELUC, *dĕh-lük'*, JEAN ANDRÉ: 1727, Feb. 8—1817, Nov. 7: geologist and meteorologist: b. Geneva, Switzerland. Deluc was engaged in business, also actively interested in political affairs till 1773, when financial reverses led him to remove to England and devote his attention to science. His most noted work, *Letters Physical and Moral on the History of the Earth and Man* (1778), was devoted to reconciling geological science and the Bible. His most useful discoveries were in meteorological science, being the first to discover that water is most dense at 40°, the disappearance of heat in the thawing of ice, and other facts of importance.

DELUDE, v. *dĕ-lôd'* [L. *delūdĕrĕ*, to deceive—from *-de*, *lūdo*, I play or mock: It. *deludere*]: to deceive; to impose on; to mislead the mind or judgment; to lead astray in belief. DELU'DING, imp. DELU'DED, pp. DELU'DER, n. one who. DELU'DABLE, a. *-dă-bl*, liable to be deluded or deceived. DELU'SION, n. *-lô'zhŭn* [L. *delūsus*, mocked]: the act of misleading the mind; the state of being deluded; error in belief; the thing which misleads or deceives; deception. DELU'SIVE, a. *-sĭv*, tending to deceive; apt to mislead. DELU'SIVELY, ad. *-lĭ*. DELU'SIVENESS, n. *-nĕs*, the quality of being delusive; tendency to deceive. DELU'SORY, a. *-sẽr-ĭ*, apt to deceive; deceptive.—SYN. of 'delude': to deceive; mislead; beguile; impose on: frustrate; disappoint.

DELUGE, n. *dĕl-ūj* [F. *déluge*—from L. *diluvĭŭm*, a great flood]: There is scarcely any considerable race of men among whom there does not exist, in some form, the tradition of a great deluge, which destroyed all the human race except their own progenitors. The classical story of Deucalion and Pyrrha is but a typical example of similar myths found everywhere, and savages and fathers of the Church alike have argued that the shells, corals, and other marine objects often found on tops of mountains, offered distinct proof of the historical reality of a deluge. That the Noachian deluge recorded in Scripture covered the whole earth and destroyed all mankind save one family, was the universal opinion until toward the close of the 18th century. The organic remains, on which the science of palæontology is now founded, were regarded as its wrecks, and were held to prove that it had covered every known country, and risen over the highest hills. In the progress of geology, it soon became evident that most of the stratified rocks demanded an earlier origin than a few thousand years, and the influence of the deluge was consequently restricted to the slightly altered superficial deposits; but many of these were, after a few years, found to belong to a period vastly anterior to any historical epoch, and to have been produced by long-continued and persistent agencies, differing totally from a temporary cataclysm. The more common

modern opinion regards the flood of Noah as partial and local, although the universality seems fairly enough to be implied in the biblical description, and although the old theory has been revived by writers of some authority, other noted men have argued and maintained the partial character of the flood from the absence of all record of a deluge among the black races of the world, as the negroes and Papuans, asserting that this opinion is quite consistent with the exegesis of Scripture, with tradition, and the doctrine of the Church, while it is the only theory that avoids all the ethnological and linguistic difficulties presented by the existence of the great negro and yellow races marked off so distinctly from the Noachian type. The deluge traditions of many primitive races are connected with religious mysteries, and it is scarcely true, as has often been asserted, that it is the Old Testament alone that gives a moral reason for the deluge sent upon the world. The Chaldean account discovered by George Smith presents a striking resemblance to the Genesis story, and agrees with it also in making the flood distinctly a divine retribution for human sin, although it of course differs from the Jewish account in being polytheistic instead of monotheistic.

Bibliography.—Buckland, *Reliquiæ Diluvianæ;* Howorth, *The Mammoth and the Flood;* Motais, *Le Déluge Biblique.* Compare: Sayce, *Fresh Light from the Ancient Monuments;* Prestwitch, *On Certain Phenomena Belonging to the Close of the Last Geological Period.*

DELUGE TABLET, or DELUGE TABLETS: in *archeol.*, the name given to a tablet or tablets (the eleventh of the Izdubar Legends), inscribed with cuneiform writing, which being translated is found to contain the Chaldean account of the deluge. Perhaps it may have been originally Accadian. A paper on the subject was read by Mr. George Smith, of the British Museum, before the Society of Biblical Archæology, in 1872, Dec. 3, and a revised translation published 1874: see *Bib. Archæol. Soc. Trans.* iii. (1874), 530–576.

DE LUNAT'ICO INQUIREN'DO: see INSANITY (legal).

DELUN'DUNG (*Prionodon gracilis*): carnivorous animal inhabiting the forests of Java, referred to the family *Viverridæ,* but regarded as a connecting link between that family and *Felidæ.* It is of slender form, with a long cylindrical tail, and is prettily streaked and spotted.

DELUSION: a false belief or perception, usually of a somewhat systematised character. When differentiated from illusion, delusion refers to false beliefs of a reasoned and persistent nature, while illusion refers to false perceptions in the presence of a stimulus wrongly interpreted. Again, hallucination refers more particularly to false beliefs or perceptions of distinct unreality, prompted by fanciful projections from within. In the popular sense delusion is a general term to refer to false beliefs due to ignorance, prejudice, but even more characteristically to

an unbalanced mental disposition. The entertainment of delusion thus becomes the most typical trait of insanity; and when the delusions are limited, as commonly occurs, to a circumscribed range of interests, they constitute the monomanias that form a notable factor in the conception of mental disorder. (See MONOMANIA, PARANOIA). The variety of delusions of this abnormal type is almost endless; but certain types occur with great frequency, the character of the delusion being at times symptomatic of the nature of the disorder. Delusions of persecution or again of unpardonable sinfulness, in melancholia; of threat and danger and mocking voices and violence in mania; delusions of grandeur in general paralysis as also in mania; and furthermore such types as delusions of suspicion, of change of fortune or personality, of imaginary romancing and interesting personal relations are likewise significant. Naturally such systematic and persistent states are likely to be reared upon a basis of organic or functional impairment, and are elaborated upon the basis of actual hallucinations, such as taunting voices, of strange sensations in the viscera (leading to beliefs of poisoning) and most largely in the range of visual appearances. It is by transfer from this range of abnormal delusions that the term is applied to false beliefs among normal persons in which intense desire, brooding, conviction, religious fervor, sentimentality, seem to act to fix wrong and baseless beliefs, in spite of obvious inconsistency, in a manner comparable to the action of a disordered mind. It is here that the borderland of eccentricity and idiosyncrasy is to be found.

DE LUXE, *dė lŭ́ks* [Fr.]: sumptuous. ÉDITION DE LUXE, an edition of a book distinguished by super-excellence of typography, paper, binding, illustrations, etc., and by the small number of copies printed.

DELVE, v. *dĕlv* [AS. *delfan;* Dut. *delven*, to dig: Dut. *delle*, a valley—*lit.*, to make a dale or valley]: to open the ground with a spade; to dig. DELV'ING, imp. DELVED, pp. *dĕlvd*. DELV'ER, n. one who.

DELVINO, *dĕl'vē-nō:* town of Albania, European Turkey, about 50 m. n.w. of Janina, beautifully situated on a hill-slope covered with olive and orange groves. The women's dress is peculiar, being a long white wrapper enveloping them from head to foot, giving them the appearance of animated monumental figures. Delvino is fortified, is the seat of a Greek bishop, and has considerable trade in olive-oil. Pop. 7,500.

DELYANNIS, *dĕl-ĭ-ăn'ĭs*, THEODOROS, Greek statesman: b. Kalavryta, Peloponnesus, 1826; d. Athens 1905, June 13. He entered politics early in life and in his long career held many cabinet positions. While prime minister for the third time, 1895–7, he brought about the Græco-Turkish war, whose disastrous result obliged him to resign with his whole cabinet. He was stabbed by a professional gambler for the stringent measures taken by him against gambling houses.

DEMAGNETIZE, v. *dē-măg'nĕ-tīz'* [L. *de*, down, away; and *magnetize*]: to deprive of magnetic power or influence. DEMAG'NETI'ZING, imp. DEMAG'NETIZED, pp. *-tīzd*.

DEMAGOGUE, n. *dĕm'ă-gŏg* [F. *démagogue*—from Gr. *dēmagōgos*—from *dēmos*, the people or populace; *agōgos*, a leader: It. *demagogo*]: an orator who addresses himself to the people in order to attach them to himself for factious purposes; a democratic or revolutionary politician; a political charlatan. DEMAGOG'ISM, n. *-ĭzm*, the principles, acts, or conduct of a demagogue. DEM'AGOG'Y, n. *-gŏj'ĭ*, the qualities of a demagogue.

DEMAIN, n. *dĕ-mān'*, or DEMESNE, n. *dĕ-mēn'* [OF. *demaine*, estate, possessions—from L. *domĭnĭŭm*, lordship, estate, possessions]: estate in lands; a house, and land adjoining, kept for the proprietor's own use; often used in the plu. DEMESNES, *dĕ-mēnz'*: see DEMESNE.

DEMAND, v. *dĕ-mănd'* [F. *demander*, to demand—from L. *demandārĕ*—from *de*, *mandārĕ*, to commit to one's care]: to claim or seek from, as by authority or right; to require or ask, as a price; to question as by virtue of a right; to be in urgent need of; in *law*, to prosecute in a real action: N. an asking with authority; a challenging as due; the requiring of a price for goods; the desire to possess. DEMAND'ING, imp. DEMAND'ED, pp. DEMAN'DABLE, a. *dă-bl*, that may be claimed. DEMAN'DANT, n. one who. DEMAN'DER, n. one who. DEMAND AND SUPPLY, in *commerce*, terms used to express the relations between consumption and production. IN DEMAND, much sought after. ON DEMAND, at once, on request or presentation.—SYN. of 'demand, v.': to ask; request; beg; beseech; supplicate; entreat; implore; solicit; adjure; crave; require; question.

DEMAND AND SUPPLY: in political economy, the desire for services or utilities on the one hand, and the production or offer of them on the other, which tend to complete an act of exchange. Demand is commonly said to be relative to supply, but in reality it is reciprocal to it. Certain political economists qualify the term demand by the word effectual, but it is scarcely necessary to make such a limitation. A mere desire for objects has no commercial significance, but that desire simply which contemplates a mutual benefit. Thus the wish of a beggar to possess a diamond cannot affect the price of the article, as he can offer no desirable object in return. The intensity of demand, and the consequent effect upon values, will be proportionate to the necessity which exists for satisfying the demand. Different rules, therefore, will apply to the increase of price consequent upon increased demand and reduced supply in articles of voluntary use, and to the same rise in price when affecting articles of necessary use. The demand for the latter class of utilities is constant, and a deficiency in supply cannot be met by abstinence, except to a scarcely appreciable degree, whereas any considerable deficiency in the supply of articles of voluntary use is to

some extent met by economy. Prices, will therefore, increase in different ratios according to the degree in which the commodities demanded are necessary or convenient. Thus the price of grain may rise, in the case of a bad harvest, from 50 to 100 per cent; cotton or wool, in similar circumstances, would certainly fluctuate, but not to anything like the same extent; wine would vary in price least of all; the deficiency in the last two commodities being artificially restored by the decrease of demand consequent on economy and abstinence. See POLITICAL ECONOMY.

DEMARKATION, or DEMARCATION, n. *dē′mâr-kā′shŭn*, [F. *démarcation*—from *de*, *marquer*, to mark: L. *de;* AS. *mearc*, a mark, a boundary: Sp. *demarcar*, to mark out limits]: a line, real or imaginary, that bounds or limits; separation of territory; but the common expression is LINE OF DEMARKATION.—An imaginary due n. and s. line was so called, running 360 m. w. of the Azores; established by Pope Alexander VI., 1494, who decided that all new lands discovered w. of this line should belong to Spain, all e. to Portugal.

DEMATIEI, n. plu. *dĕ-măt-ĭ-ē′ī* [Gr. *demation*, a little bundle; dim. of *dema*, a bundle; *deō*, I bind]: family of hyphomycetous fungi, growing on the dead parts of plants, and characterized by the mostly septate spores being attached to rigid thick-walled filaments, which are continuous or septate. DEMAT′IUM, *-ŭm*, genus of *Dematiei*, growing upon dry leaves, bark, etc.

DEMAVEND, MOUNT, *dĕm-â-vēnd′:* extinct volcano in Persia, abt. 40 m. n.e. of Teheran. It forms the loftiest peak of the Elburz Chain, which separates the low shores of the Caspian Sea from the high table-land of Persia. Although no longer subject to eruptions, Demavend bears traces of it having been an active volcano within the most recent geological epoch. Its summit is conical, covered with sulphur, and rent by heated fissures. The crater is still visible, and the surface of the mountain is in many places covered with scoriæ. At its base hot springs give evidence of the continued existence of volcanic fire at no great distance beneath the surface. A great deposit of sulphur covers the summit of Demavend, and is brought down the plains in bags to be disposed of as an article of commerce. Although the path that leads to the peak is, for this reason, familiar to the inhabitants of the adjoining districts, the mountain was not ascended by any European till 1837, Sep., when William T. Thomson of the English Embassy at Teheran, with a view of taking important bearings from a point which commands an extensive view of the shores of the Caspian, determined to reach the summit. He set out from the base with four guides, three of whom deserted him when they experienced the effect of the rarified atmosphere on their breathing. The first night he slept below the snow limit; the second night in a sulphur cavern near the summit, so highly heated that the hand could not endure being placed near

a crevice of the interior. On leaving this place of shelter, the traveller's wet clothes were instantly frozen with a bitter blast from the Caspian. The height, as recently determined by the Russian Survey, is 18,600 feet.

Demavend towers high above the neighboring mountains, the adjacent summits not exceeding two-thirds of its elevation. At all times it has been a conspicuous object from the great trade route between India and the West, along the edge of the Persian table-land. It is not then to be wondered at that it is connected with the earliest Persian as Etna is connected with the earliest Greek traditions. There seems indeed more than an accidental coincidence between the fables which relate to the two mountains. According to the Greeks, the giant Typhon was buried under the volcanic region of Sicily, and the earthquakes and eruptions were caused by his efforts to escape. Fire proceeded from his mouth, and he was figured with one hundred snakes growing from each shoulder. Zohak, a personification of the evil principle, was in the same way supposed by the Persians to be buried under Demavend. He was figured with one serpent growing out of each shoulder; and in other respects he had much in common with the Greek monster.

DEMBEA, *dĕm'be-a*, or Tzana, Lake of: in Abyssinia; lat. 12° n., long. 37° 15′ e.; 50 m. in length, with an average breadth of 25 miles. It occupies part of an extremely fertile plain, at an elevation of some 6,000 ft. above the sea, and contains several beautiful islands, one of which is inhabited. Its southern portion is traversed by the Blue Nile.

DEMBINSKI, *dĕm-bĭn'skē*, Heinrich: 1791, Jan. 16—1864, June 13; b. in the palatinate of Cracow: Polish gen. connected with the Hungarian revolution. He entered the Polish army 1809, took part in the invasion of Russia by the French 1812, and was made captain by Napoleon himself on the battle-field of Smolensk. He subsequently distinguished himself at Leipsic. After the fall of the Empire, he returned to his native country, and lived in comparative obscurity. The Polish revolution of 1830 called him again to arms. He obtained the command of a brigade of cavalry, and showed heroic courage at the battle of Kuflew. Afterward, he made the campaign of Lithuania, under Gielgud; and arriving in Warsaw—having traversed the entire Russian lines—was made commander-in chief of the national army. After the surrender of Warsaw to the Russians, Dembinski went to France, where he published his *Mémoires sur la Campagne de Lithuanie* (Strasbourg 1832). In 1833, he went to Egypt, and entered the service of Mehemet Ali, but returned to Paris 1835. On the outbreak of the Hungarian insurrection, he offered his services to that country, and Kossuth appointed him commander-in-chief of the Hungarian army. He drew up a plan of the campaign, but could not obtain the concurrence of Görgei whose tardy arrival caused the loss of the battle of Kapolna, 1849, Feb. 26-28.

Forced to retreat behind the Theiss, Dembinski resigned his command, but subsequently consented to act under Messaros. He strongly urged the necessity of uniting the cause of Hungary with that of Poland, and proposed to lead an army into Galicia; but his advice was not taken. After the resignation of Kossuth, and the capitulation signed by Görgei at Vilagos (1849, Aug. 13), Dembinski fled to Turkey. In 1850, he returned to France, and began his *Mémoires* on the Hungarian war. He died in Paris.

DEMEAN, v. *dĕ-mēn'* [OF. *demener*, to conduct, to guide—from L. *de*, down; F. *mener*, to lead, to conduct—from mid. L. *minārĕ*, to lead from place to place]: to behave; to conduct; to lessen; to debase; to degrade; to lower: N. in *OE.*, presence; behavior. DEMEAN'ING, imp. DEMEANED', pp. *-mēnd'*. DEMEAN'OR, n. *-ẽr*, behavior; carriage; deportment. *Note.*—DEMEAN has acquired the sense, 'to debase or degrade,' from the popular etymology which supposed it to be derived from *de*, down, and *mean*, base; or otherwise a mistake for OE. *bemean.*—SYN. of 'demeanor': air; bearing; mien; behavior; management; conduct; deportment.

DEMEMBRÉ, *dā-mâng-brā*, or DISMEM'BERED: heraldic term to signify that the members of an animal are cut from its body.

DEMENTED, a. *dĕ-mĕn'tĕd* [L. *dementīrĕ*, to be out of one's sense; *dementĭă*, madness—from *de*, *mens*, or *mentem*, the mind *-lit.* down or depressed in mind]: out of his mind; crazy; infatuated; mad. DEMEN'TEDNESS, n. DEMEN'TATE, v. *-tāt*, to make mad. DEMEN'TIA, n. *-shĭ-ă*, a form of insanity, characterized by a rapid succession of imperfect and disconnected ideas, with loss of reflection and attention.

DEMENTIA: constitutes one of the chief types of mental disorder, and refers to a pronounced enfeeblement and impairment of the rational, perceptual and emotional powers. As a general term, it is applied to any decided decline of normal mental power; but when more precisely used, it implies an actual degenerative loss. The waning of mental power in old age represents a normal decline of the type which when accentuated becomes senile dementia, and in the extreme results in an almost helpless dependence. In the insanities dementia is most commonly a sequel to a severe invasion of the brain tissues by a protracted and exhausting disorder. It is thus the terminal stage of cases of mania, melancholia and general paralysis. When this decline steps in without such concurrent symptoms and preliminary states, it is spoken of as dementia praecox. Dements in extreme condition seem almost dead to their own past, lose sensibility and responsiveness, are grossly negligent in person and conduct and present a state parallel to idiocy. The term 'demented' is often loosely applied to any insane person; its use is pertinent when applied to an actual enfeeblement of mental power and not to a disorder of other type and origin.

DEMERA'RA River: in British Guiana (q.v.); more than 200 m. in length, is 1½ m. broad at its mouth, and navigable by ships of considerable burden for 100 m. Its affluents are numerous though small, and at its embouchure into the Atlantic it affords a spacious harbor, obstructed, however, by a bar. There are many settlements on its banks.

For the county of Demerara, see Guiana, British.

DEMERIT, n. *dĕ-mĕr'ĭt* [F. *démérite*, demerit—from mid. L. *demerĭtum*, a fault—from L. *de*, *merĭtus*, deserved]: that which deserves punishment; opposite of *merit;* misdeed; ill-deserving; misconduct; in *OE.*, merit; desert—in which the *de* does not change the sense of *merit.*

DEMESNE, *dė-mēn'* or *dė-mān'* [see Demain]: in the present day the right which the owner in possession of lands in fee simple has in his estate. But the original signification of demesne was that portion of the lands of a Manor (q.v.) which the lord of the manor reserved for his immediate use and occupation. The lands so reserved were cultivated either by the lord of the manor or by his villeins (see Serf), and were thus distinguished from lands granted or subfeued to vassals for services to be rendered. So long as the practice of sub-infeudation continued, the demesne lands were a distinct and separate right; but, the statute *Quia Emptores*, 18 Ed. I., having abolished sub-infeudations, and declared that on every transfer of land the feofee should hold of the lord paramount, all lands became of necessity demesne, being in the actual possession of the owner or his tenants. Demesnial, a. *dĕ-mēn'ĭ-ăl,* pertaining to demesnes.

Ancient Demesne, species of Copyhold Tenure (q.v.). Lands held in ancient demesne are said to have belonged originally to vassals of the crown. The services rendered were determinate, not variable at the will of the lord, and more honorable than those of copyhold in general. The tenants also were entitled to certain privileges and exemptions from feudal services. But in process of time, the character of the services appears to have varied; so that in the present day tenants in ancient demesne in some instances differ little from ordinary copyhold tenants.

DEME'TER: see Ceres.

DEMETRIUS, *dē-mē'trĭ-ŭs:* assumed name of four different persons prominent in Russian history 1603–13. The real Demetrius was son of Ivan 'the Terrible,' who died 1584 leaving two sons, Feodor, who ascended the throne, and Demetrius. Feodor was a weak ruler, completely under the control of his brother-in-law Boris Godunoff. Demetrius was brought up at a distance from the Muscovite court, and when only nine or ten years old, either accidentally killed himself, or more probably, was put to death. In 1598, Feodor died also, and Boris ascended the throne, but his tyrannical measures rendered him very unpopular.

In 1603, a strange story reached Russia. It was affirmed that Demetrius was not dead, but had appeared

in Poland. The *fact* was, that a person calling himself Demetrius, but who, it was asserted, was in reality a monk named Grishka Otrepiev, belonging to the convent of Tchudoff, had found means to persuade Prince Wisniewski in Lithuania, and afterward Mniszek, Palatine of Sandomir, that he was Demetrius the true son of Ivan. The palatine introduced him to Sigismund III., King of Poland, who saw in him a useful instrument for introducing Polish influence into Russia, and so aided him in his designs against Boris. Toward the close of 1604, he invaded Russia, repeatedly defeated Boris (who died 1605 Apr.), and entered Moscow in June, the people receiving him with every demonstration of enthusiasm. He ruled for some months with vigor; but his manifest predilection for the Poles soon excited the Russians against him, and the arrival of his bride, Marina Mniszek, the daughter of the Palatine of Sandomir, 1606, May 12, brought the discontent to a head. Sixteen days later, an insurrection broke out in the capital, headed by Prince Wasili Shuiski. Demetrius was slain, and a multitude of the Poles massacred; and Wasili Shuiski ascended the throne.

In the following year, an individual appeared alleging that he was Demetrius, and that another had been mistaken for him in the Moscow massacre. He found a considerable number of adherents, especially when Marina acknowledged him as her husband. The Poles also helped him, and for some time it seemed likely that he would succeed; but at length he was put to death at Kaluga 1610.

The third *false* Demetrius gave himself out to be the son of the first. After a brief career, he fell into the hands of the czar, and was strangled.

The *fourth* made the same pretensions, but falling into the hands of the Cossacks, was carried to Moscow, where he was put to death 1613.

DEMETRIUS, PHALE'REUS (named from the Attic demos of Phalerus, a seaport of Athens): abt. B.C. 345–283 (it is said); b. Phalerus: orator and politician. Though descended from a family possessing neither rank nor property, yet by the resolute and persevering exercise of his abilities, he rose to the highest honors at Athens. Having been educated in the school of Theophrastus, he entered upon public life about B.C. 325, and soon made himself famous for great oratorical talent. In B.C. 317, Demetrius was placed by Cassander at the head of the administration of Athens, which office he discharged with such acceptance for nearly 10 years, that the grateful Athenians, during that time, heaped all kinds of honors upon him, and erected to him no less than 360 statues. During the later period of his administration, he seems to have given himself up to dissipation; and when Demetrius Poliorcetes, King of Macedonia, approached Athens with a besieging army, B.C. 307, Demetrius, having lost the sympathies and co-operation of the Athenians, was compelled to flee. All his statues were demolished except one. Demetrius retired first to Thebes, but afterward found

refuge in the court of Ptolemy Lagi, at Alexandria, where he lived many years, applying himself to literature. On the death of his protector, Demetrius was expelled from the court of Egypt, and retreating to Busiris in Upper Egypt, he is said to have died there from the bite of an asp. Demetrius was the last of the Attic orators worthy of the name. His style was graceful, insinuating, and elegant; bearing, however, in its luxuriousness and tendency to effeminacy, the marks of a declining oratory. The list of his works (50 in number) given by Diogenes Laërtius shows him to have been a man of most extensive acquirements.

DEMETRIUS I., Poliorcetes, *dē-mē'trĭ-ŭs pŏl-ĭ-or-sē'-tēz*, King of Macedonia: B.C. 335–B.C. 283: son of Antigonus, one of Alexander's most successful generals, who received several provinces in Asia Minor on the division of the Macedonian empire. He entered on a military career at an early age, was his father's chief officer in the war with Ptolemy, and received his surname Poliorcetes 'taker of cities' because of his military skill and victories. When 22 years old he opposed Ptolemy's advance into Syria; was defeated at Gaza B.C. 312, but soon afterward gained a decisive victory over Ptolemy's ablest general; took the cities of Munychia, Megara, and Athens from Cassander; defeated Ptolemy in a great naval battle and occupied Cyprus, B.C. 306; maintained an unsuccessful siege of Rhodes over a year; returned to Greece, expelled Cassander from Attica, and took Corinth, Argos, Sicyon, and most of the towns of Arcadia; took part in the battle of Ipsus in Phrygia where his father lost his life, B.C. 301; made an alliance with Seleucus and retook Athens after a long siege, B.C. 295; seized the throne of Macedonia while acting as mediator between the sons of Cassander, B.C. 294; lost his Asiatic possessions to Ptolemy and Seleucus; was expelled from Macedonia by Pyrrhus, and imprisoned by Seleucus till his death.

DEMETRIUS of Sunium: philosopher of the Greek sect of cynics, whose professed aim was to inculcate a love of rigid virtue and a contempt of pleasure. Authorities differ as to his identity. Some assert that he spent the greater part of his life at Corinth, and first became famous during the reign of Caligula; while others maintain that his life was spent in Rome, or at least that he lived there till the reign of Domitian. Philostratus mentions a Demetrius of Corinth, who, Prof. Drisler believes, was the same as Demetrius of Sunium. Authorities agree, however, in crediting him with a life of extreme strictness and a bitterness of speech in censuring high and low alike who differed with him that caused his banishment.

DEMETZ, *dē-mās*, Frédéric Auguste: French philanthropist and prison reformer; b. Paris 1796, May 12; d. there 1872, Nov. 22. He was judge, vice-president of the chamber of correctional police, and court councilor. He founded in 1840, the penitential and agricultural colony of Mettray for juvenile delinquents, devoting himself wholly

to this establishment, which has served as a model in France and elsewhere. He was elected corresponding member of the Academy of Moral and Political Sciences, Paris, in 1864. He wrote many essays and reports upon penitentiary methods and reforms.

DEMI, *dĕm'ĭ* [F. *demi*, half—from L. *dimĭdĭŭm*, the half—from *dis*, apart; *medĭŭs*, middle: Gr. *hēmĭ;* L. *sēmi*, half]: a very common prefix, signifying a half, or part of that of which it forms the prefix—generally separated by a hyphen. In *heraldry*, Demi or Demy denotes an animal of which only the upper or fore half is represented. In inanimate objects, the dexter half per pale is usually intended, when it is said to be demi, though a *demi-fleur-de-lis*, for example, may be a *fleur-de-lis* divided per fess.

DEMI-BASTION, n. *dĕm'ĭ-băst'yŭn* [*demi*, and *bastion*]: kind of half-bastion; that part of a bastion cut off by the capital, consisting of one face and one front; it frequently terminates the branches of a crown-work or horn-work: see Bastion: Crown-work: Horn-work.—Demi-cadence, n. *-kā'dĕns*, in *music*, an imperfect cadence, or one falling on any other than the key-note. Demi-equitant, a. in *bot.*, applied to folded leaves successively embracing each other, when only one half of a leaf embraces one half of another; obvolute: see Equitant. Demi-god, n. *dĕm'ĭ-gŏd*, an inferior deity; a fabulous hero.

DEMIDOFF, *dém'e-dof'* or *dĕm-e-dof':* Russian family who in Russia occupy a position as capitalists similar to that held by the Rothschilds elsewhere, and who are not more celebrated for their wealth than for their beneficence.

Nikita Demidoff, founder of the family, was a serf in the time of Peter the Great, but, leaving the place of his birth to escape being taken as a recruit, he afterward became famous as a manufacturer of arms, and before his death had amassed an immense fortune. In 1699, he established an iron-foundry, under the auspices of Peter the Great in whose favor he had attained a high position, near Neviansk on the e. base of the Ural Mountains; this being the first iron-foundry ever established in Siberia. He subsequently erected numerous other forges among the solitudes of the Urals, and realized from them very great riches.

Akimfi Demidoff, son of Nikita Demidoff; employed German workmen to explore the rich mines of gold, silver, and copper, in the valley of the Irtish, and the upper reaches of the Obi. In 1725, he built, at the foot of the Magnetic Mountain in Siberia, a foundry called Nischneitagilsk, still the most important in all Siberia. The Russian govt., sensible of the great service done to the country by the labors of such a man, conferred upon the enterprising metallurgist the title of counselor of state.

Procope Demidoff, son of Akimfi Demidoff; founded 1772 a school of commerce at Moscow, intended to furnish a complete education for the sons of Russian tradesmen. This establishment was transferred to St. Petersburg 1800.

Paul Demidoff, cousin of Procope Demidoff, also a man of energy, travelled extensively when young, applying himself to the natural sciences. He presented to the univ. of Moscow a valuable museum of natural history, and founded also, 1803, the Demidoff Museum at Yaroslavl.

Nicholas, Count Demidoff, 1774-1828, nephew of Paul Demidoff; distinguished himself while young as an aide-de-camp in the war against the Turks. Later, he married the Countess Stroganoff, and became a privy councillor and imperial chamberlain. His taste for the fine arts and for natural science led him to travel extensively; he also caused the workmen whom he employed in his mines to travel in order to acquaint themselves with the processes of foreign miners. In 1812, he fought at the head of a regiment which he himself raised and led against the French. A collection of his works, entitled *Opuscules d'Economie Politique et Privée*, was published at Paris 1830. Of his two children, Paul and Anatol, the former died young, leaving the great bulk of his fortune to the latter.

Anatol Demidoff, 1810 (or 12)-1858, Jul. 13; son of Count Nicholas Demidoff, was educated in France. He was always remarkable for enthusiasm in letters and science. His principal book, published at Paris 1839 (English translation, London 1853), is entitled *Travels in Southern Russia and the Crimea, through Hungary, Wallachia, and Moldavia*. In 1840, he married the Princess Mathilde de Montfort, daughter of Prince Jerome Bonaparte. After five years, the marriage, by which there had been no children, was by mutual consent dissolved. Demidoff, 1856, June 19, presented the town of Spa with a bust of Peter the Great. Russia, as well as other countries, owes the foundation of many valuable charitable institutions to his philanthropy. He died at Baden.

DEMI-GORGE, n. *dĕm'ĭ-gŏrj* [F. *demi*, half, and *gorge*]: in *fort.*, half the imaginary line connecting the interior extremities of the faces or flanks of a work; in a bastion, the imaginary line formed by the prolongation of the curtain to the capital. See Bastion; Gorge.

DEMIJOHN, n. *dĕm'ĭ-jŏn* [F. *dame-jeanne*, lady Jane; a word common in the Levant and Arabia, and called in Egypt *damagan*, of which the F. is a corruption]: a large bottle with a small neck inclosed in wicker-work; a carboy.

DE MILLE, Henry Churchill: American playwright; b. North Carolina about 1853; d. Pompton, N. J , 1893, Feb. 10. He was graduated at Columbia College, and was by turns preacher and teacher till 1882, when he became examiner of plays at the Madison Square Theatre, and later for a short time an actor. His first successful play was the *Main Line*, in which he collaborated with Charles Barnard. In 1887, having become associated with David Belasco, he wrote the well-known society dramas: *The Wife* (1887); *Lord Chumley* (1888); *The*

Charity Ball (1889); *Men and Women* (1890). His last work was a melodrama adapted from the German, entitled *Lost Paradise*, which was successfully produced in 1892.

DE MILLE, James: Canadian novelist; b. St. John, N. B., Aug. 1837; d. Halifax, N. S., 1880, Jan. 28. Graduated at Brown College in 1854. He was professor of classics in Acadia College (1860-5), and of history and rhetoric in Dalhousie College, Halifax, from 1865 until his death. Among his publications are; *The Dodge Club* (1866); *Cord and Creese* (1867); *A Comedy of Terrors* (1872); *The Living Link* (1874); and many books for boys, including *Treasures of the Sea*. A posthumous work, *A Strange Manuscript Found in a Copper Cylinder*, appeared in 1888. A treatise of his on rhetoric was published in 1878.

DEMI-LUNE, n. *dĕm′ĭ-lôn* [F. *demi*, half; L. *luna*, the moon, from the semicircular shape it originally had]: in *fort.*, a work constructed to cover or defend the curtain or wall of a place, and the shoulders of the bastions adjoining; consisting of two faces, meeting at a salient angle toward the open country, and situated between the covered-way and the curtain; it has two demi-gorges formed near the counterscarp, and is surrounded by a ditch: see Lunette: Ravelin.

DEMI-MONDE, n. *dĕm′ĭ-mŏngd* [F. *demi*, half; *monde*, world]: a genteel name for the higher class of courtesans or prostitutes; they are expert in the art of dress, and for years their Parisian leaders have set the fashions for women's dress in Europe and the United States: see Monde.

DEMIREP, n. *dĕm′ĭ-rĕp* [F. *demi*, and Eng. *reputation:* comp. Gael. *raip*, debauchery, filth: OE. rip, a morally ill-conditioned person]: a woman of doubtful character, or of suspicious chastity.

DEMISE, n. *dĕ-mīz′* [OF. *demise*, laid down, put away —from OF. *desmettre*, to displace, to dismiss—from L. *dimissus*, sent out or forth, dismissed—from *dis*, apart; *missus*, sent]: death; decease, formerly applied to a sovereign only, whose death passed the crown to a new possessor; the conveyance of an estate by lease or will: V. to bequeath; to grant by will; to convey or lease; to devise: see Lease (English). Demi′sing, imp. Demised′, pp. *-mīzd′*. Demi′sable, a. *-mī′ză-bl.*—Syn. of 'demise, n.': decease; departure; release; transmission; transference.

DEMI-SEMIQUAVER, n. *dĕm′ĭ-sĕm′ĭ-kwā′vẽr* [*demi*, and *semiquaver*]: half of a *semiquaver;* or the 32d part of a semibreve: see Note, in Music; usually, the shortest musical note.

DEMIT, v. *dĕ-mĭt′* [L. *demittĕrĕ*, to let down, to lower: F. F. *démettre*, to resign: comp. L. *dimittĕrĕ*, to dismiss, to discharge—from *dis*, apart; *mitto*, I send]: in *Scot.*, to resign or give up an office; to lay down. Demit′ting, imp. Demit′ted, pp. Demis′sion, n. *-mĭsh′ŭn* [F. *démission*,

resignation of an office—from L.]: a lowering; degradation; in *Scot.*, the laying down or resignation of an office.

DEMIURGE, n. *dĕm′ĭ-ėrj* [Gr. *dēmĭour′gos*, one working for the people: L. *demĭur′gus*, a chief magistrate—from Gr. *demĭŏs*, of or belonging to the people; *ergon*, a work; hence a workman]: in Plato's philosophy the creator of the material universe; in the cosmogony of the Gnostics the creator or former of the world of sense, an agent (a supposed emanation from the one self-originated Being) employed for the purpose of creating the world. He was conceived as the archon or chief of the lowest order of the spirits or æons of the pleroma (see Æon): mingling with chaos, he formed in it a corporeal animated world. He created man, but could impart to him only his own weak principle, the *psyche* or senuous soul; therefore the highest, the really and only good God, added the divine rational spirit or *pneuma*. But the power of evil in the material body, and the hostile influence of the merely sensuous Demiurge, prevented the development of that higher element. The Demiurge holding himself to be the highest God, could not bring his creatures to the knowledge of the true Godhead: the Gnostics held that such a Demiurge was the Jehovah of the Jews, and that he gave them the imperfect law of Moses, which promised merely a sensuous happiness, and even that not attainable; and that against the spirits of the *hyle*, or world of matter, he sent only a psychical, and therefore powerless Messiah, the man Jesus. See Gnostics. Dem′iur′gic, a. *-ėr′jĭk*, pertaining to creative power.

DEMIVOLT, n. *dĕm′ĭ-vŏlt* [F. *demi-volte*]: one of the seven artificial motions of a horse, in which he raises his forelegs in a particular manner.

DEMMIN, *dĕm-mēn′:* town of Prussia, on the river Peene, on the borders of Pomerania and Mecklenburg; lat. 53° 50′ n., long. 13° 1′ e. Beside the town proper, D. comprises three suburbs. It has four public squares and a town-house, and manufactures of woolens, linens, hats, and leather. It has also distilleries and breweries, and some trade in tobacco, gloves, etc. It suffered considerably during the Thirty Years' War, previous to which it was of much more importance than it has since been. Pop. about 11,000.

DEMOBILIZE, v. *dē-mōb′ĭl-īz* [L. *de*, down, and *mobilize*]: to dismiss and send to their homes troops that have been employed on active service: see Mobilize.

DEMOCRACY, n. *dĕ-mŏk′ră-sĭ* [Gr. *dēmokrătĭă*, democracy—from *dēmos*, the people; *kratĕō*, I am strong, I reign as a sovereign]: government by the people; a form of government in which the supreme power is exercised by the people collectively. Democrat, n. *dĕm′ŏ-krăt*, a friend to popular government. Dem′ocrat′ic, a. *-krăt′ĭk*, or Dem′ocrat′ical, a. *-krăt′ĭ-kăl*, popular; pertaining to government by the people. Dem′ocrat′ically, ad. *-lĭ*. De-

MOCRATIZE, v. *dĕ-mŏk′ră-tīz*, to render **democratic**. **DE**MOC′RATI′ZING, imp. DEMOC′RATIZED, pp. *-tīzd*.—It is interesting to trace the progress of the idea of *democracy* which has now attained such breadth and prominence. In Greece, whence we derive the name, it was understood to mean a commonwealth so constituted that the power was exercised by the body of the citizens (the *demos*), and not by an individual, or by a dominant caste. Democracy thus stood opposed both to monarchy and to aristocracy. Most of the republics of Greece, especially that of Athens, were democracies in this sense. The name did not at all imply the notion of an absolutely equal right in all citizens, still less in all men, to the exercise of political power. Neither the total absence of rights of all kinds on the part of the larger half of the population, the slaves, nor the distinction recognized by law among citizens proper (e.g., the exclusion of the poorer citizens from office under the Solonian constitution at Athens), were considered incompatible with the nature of a democracy; though in regard to inequalities among citizens, the continually growing force of the democratic principle tended to their gradual extinction, and to the transference of power to the mass of citizens without distinction. Aristotle regarded this as an encroachment of *ochlocracy* ('mobocracy'), the degenerate form of democracy, or democracy unmixed and unchecked. Or more frequently, he speaks of democracy as the degenerate form of 'the polity' (Gr. *politeia*). The polity with him was the form where the many govern for the common benefit.—*Polit.* III. chap. 5; IV. chap. 6.

In modern history, we meet at the threshold a state of society which may be called democratic. Among the German nations, there was an almost perfect equality of all freemen (i.e., all that were not slaves), and real self-government exercised by these freemen in each separate tribe. For, the personal distinction enjoyed by certain families gave them no privileges over the other freemen, and where royalty existed, it could hardly be said to rule, since the king could do nothing without the concurrence of the assembly of freemen, nor did he reign by mere birthright, but required the confirmatory choice of the people.

This condition of general liberty and equality gave place gradually to one quite opposite. Through the growth of the Feudal System (q. v.), the vast majority fell into a more or less abject dependence upon a privileged minority. The mass of former freemen, now sunk into serfdom, were hardly distinguishable from those actually slaves, whose position on the contrary had now become less dependent. The dominant class, the nobility, branded all that did not belong to themselves as 'people,' 'commonalty,' 'canaille.' Thus the term 'people,' which in the ancient republics implied the rights of citizenship, came to denote the masses that were without rights. The distinction of the dominant class from the mass of the

people rested chiefly on two points—exclusive occupation in war, and the free possession of land, which was granted for warlike service alone.

But within this system of graduated dependence, from the monarch down through the aristocracy and their retainers in various degrees, there sprang up slowly an opposing element, which, as originating in the mass called the people, may be designated as democratic. It was not so much a new element, as the resuscitation of the old Roman municipal life, which had never altogether become extinct. It was naturally in the cities that this fresh element first manifested itself. Here, instead of a lord with a group of dependents, there arose compact communities of men with equal interests, equal rights, and self-government. At the same time, a new material interest, that of movable property, the product of industry and commerce, began to claim recognition together with territorial possessions and nobility. In England, as early as the Anglo-Saxon times, a merchant who had made three voyages ranked with a thane; and soon after the Norman Conquest, the cities were represented in parliament on an equal footing with the warlike aristocracy. This took place later on the continent, and never to the same extent, except in the cities of Lombardy and Flanders, where, at an early period, the citizen element entered the lists with the feudal and warlike. Even within the cities, the same contest was carried on between aristocracy and democracy. At first, it was only those carrying on commerce on a large scale that asserted their right to take part in the municipal government of the towns; but the trades or guilds, mercantile and artisan, soon set up the same claims. These claims, pertinaciously prosecuted, often led to bloody contests, but sooner or later were everywhere victorious. Thus was the basis of democracy widened; though the guilds also did not fail to manifest an aristocratic and exclusive spirit toward the body of the people not belonging to them, and with their restrictions and monopolies acted oppressively to the country population. It was not so easy for the rural population to break the bonds of feudal subjection in which they were held, or to acquire any political standing. Isolated attempts to throw off the yoke, by peasant insurrections and wars, failed, and resulted only in increased oppression. The abrupt division between the feudal possessor of the soil and the serfs under him continued long everywhere except in England. There the rigor of the relation began early to give way, and the transition was effected so gradually and peaceably that the English historian cannot say exactly how or when. For the greater part of the continent, it was not till the French Revolution in 1789, and the impulse given by it to legislation in other countries, that the agricultural population acquired an approximate freedom and equality with other classes.

Thus had one part after another of that 'people,' so

oppressed and contemptuously thrown into the background by the dominant class in the middle ages, emerged from bondage, and successfully asserted a participation of rights, formerly the privileges of a single class. The aristocratic principle of feudal society, the principle of exclusion, privilege, of the subjection of the majority to a minority, had given way to the democratic principle of the equal rights of all classes, of all callings and employments. But the development of the democratic principle was not yet complete. Those who had made good a position in the state by the side of the feudal aristocracy, formed in their turn an exclusive class, taking their stand on the ground of certain material advantages. Thus, the merchants, as representing large masses of capital; the guilds, with their privileged industry; the agriculturists, as possessors of land, however little: all these interests formed another aristocracy within the general democracy. They were democratic in their origin, and as compared with the class that had formerly been exclusively privileged; but in another view they were aristocratic, since there still remained outside a numerous body which they, instead of admitting to political power with themselves, rather repelled, and treated much as the nobility had treated themselves. This residuary mass, which now came to be chiefly designated by the name 'people,' comprehended all those who possessed no capital, no privileged trade or calling, no land—nothing, in short, but their personal powers and capacities for work. This class forms at the present day by far the most numerous portion of the population in nearly all civilized states. The designation 'people,' intended to be depreciative, is taken by them in the very opposite sense, and they ground upon it their claim to rule the state, as being properly the people, the numerically strongest class of the community. The preference given to the class of possessors, they look upon as groundless and absurd, just as these had judged of the nobility; they therefore claim perfect equality with them, especially in the exercise of the highest political rights. It is from this point of view that universal suffrage and the rule of mere numbers, without regard to possessions or other conditions, has been proclaimed as a self-evident consequence of the democratic principle —the claim for the extreme and ultimate political development of the democratic principle without check or balance.

With this there is connected in many quarters an extension of the idea into the social realm. The same principles, it is said, that have dictated political reformations, call for a remodelling of the social arrangements of mankind; that the possessors of property, the *bourgeoisie*, ought to be deprived, not only of the political privileges that they have hitherto enjoyed, but also wholly or in part of the material basis of those privileges, their property, so as to produce a perfect equality, political, material, and social, of all classes. This gives rise to a division

of the democrats of the present day into two parties: the purely democratic party, aiming at securing only the full political consequences of the democratic principle—universal suffrage, with the absolute equality of social rights; and the social democratic or socialist party, who look upon the attainment of political rights as only the means of ultimately securing the democratic control of industry and the social equality of men.

While Socialism may in this way be regarded as an extension of the democratic principle to the industrial field, such a development with its resultant social equality is by no means a necessary part of political democracy. All that this latter requires is the removal of all privileges that destroy the unity and homogeneity of a nation, the establishment of complete personal and social liberty, and of the equality of all in the eye of the laws; and, in regard to political rights, a direct participation in the government of the state, under such a form of constitution as will exclude no fixed class of citizens as such. All this, however, seems quite compatible with making the exercise of the different political functions dependent, in the case of each individual, on certain guarantees, and with not admitting the whole body of the people to share in the government of the commonwealth at once, but only by natural gradations in proportion as increasing culture renders a wider circle capable of such functions. England and Belgium are set forth by some as historical illustrations of the way in which the real and steady progress of the democratic principle is best secured.

In France, the feudal principle, instead of a timely compromise with the democratic, as in England, came to a struggle with it of life and death. The consequence was that victorious democracy, instead of seeking to satisfy the practical wants of society first, and leaving the theoretical to be attained gradually, undertook to reorganize at one stroke the whole political and social fabric. In Germany, things took at a little later period a similar course. In Switzerland, the democratic elements were never so completely crushed as in other parts of the continent, and throughout their history the Swiss people have maintained much of their primitive freedom, which is still manifest in their local institutions, while their national government is more purely democratic than that of any other civilized nation.

In the case of the United States the foundation of the state structure was to be laid on a clear site, and the first page of the history to be written. Those who came together to form the new community were personally perfectly free and equal, and the local circumstances were such as to favor the exercise of this liberty and equality, by rendering any very great disparity in material means impossible. In such circumstances, the construction of a largely democratic order of society could proceed without struggle, and without any dangerous straining of the principle. There no one looks upon the restriction

of the franchise to residents as an infringement of the democratic principle, as in strict theory it is. Likewise, in the days of slavery the immense and terrific infraction of the democratic principle by the general exclusion of negroes from the franchise, and even from all rights of personal liberty and self-ownership, was not recognized as a denial of the democratic principle. The present exclusion from the franchise of the majority of the population—women, minors, idiots, criminals—though certainly a restriction on the pure democratic idea, is not so regarded generally. The democratic tendency, however, is shown in a wide movement to confer the ballot on women; of which the result may not now be predicted further than to say that so soon and so far as the majority of women demand the ballot, it will be granted them, thereafter to be withdrawn by law only so far as they shall practically fail to use it. For while in the immortal words of Pres. Lincoln, the U. S. govt. is and will remain 'a government of the people, by the people, for the people,' the term 'people' never has been and will not be interpreted on the theory of a strict unchecked democracy. In fact, the United States can be called a democracy only by comparison with monarchies and aristocracies; it is a *federal republic* of distinct commonwealths in firm compact as a nation. See REPUBLIC.

In the development of democracy in modern times, circumstances have directed its attacks rather against the aristocratic, than against the monarchical principle. At one time, indeed, monarchy, in its struggle with the aristocracy, found its natural allies in the democracy. The princes, striving to break the power of the great nobles which limited their own, often called in the help of the democratic element, partly by conferring privileges on bodies of the people, such as city corporations, and partly by attaching individuals of the non-privileged classes to their personal service, and appointing them to powerful positions in the state. The road to power and distinction was, it is true, already open to individuals of the democracy through the church, whose dignities and privileges were not confined to the noble by birth, but were accessible to personal capacity. At a later period, the universities also, especially in the faculty of law, formed for the democracy stepping-stones to power, from which they sometimes overtopped the aristocracy of birth. And when the princes—at their head the Louis of France—aiming at absolute authority, sought to find a counterpoise to the feudal nobility, by creating a bureaucratic state machinery, and favoring intelligence in every form, the very widest path was opened to the democratic element for attaining influence and distinction. It is true that all this was at the cost of its most essential principle; for the equality created by a levelling absolutism, raising the low and depressing the high, was nothing more than an equality of dependence upon the one absolute master of all.

The relation between democracy and monarchy was different where the ruler came to be limited as the chief officer of the nation. Such a limitation of the power of the monarch, by means of a representative system not confined to the privileged classes, but embracing also at least the citizens of towns, was in itself a victory of the democratic principle. As the circle of this popular representation widens, and its influence in the state increases, such a monarchy becomes more and more democratic in all its institutions.

In a democratic state the people may exercise their power either directly or through representatives. The direct form prevailed in the republics of antiquity; political representation, in fact, seems a modern idea. The direct form is also found in the original Swiss cantons, where almost all public business is discussed in a full assembly of the people. It is found also in the towns of New England and some other states where the town-meetings are models of successful democratic government. This direct form of democracy is adapted only for small communities with a population concentrated in small space and differing little in mode of life or culture. With the wide-spread triumph of the principles of democracy and the adoption of democratic forms of government by large states and nations, the direct method of expressing the people's will became impossible and yielded naturally to the representative form. But the modern press and other agencies of constant communication, making possible the free discussion of matters of public policy, have taken the place of the old popular assemblies in bringing the people together for the discussion and decision of political measures. The real democracy of representative government has been assured through frequent elections, wide-spread information in regard to the doings of representative bodies and the consequent hold which the constituency have upon their representatives. The further development of democratic control has also been obtained through the initiative, or right of the citizens to propose laws independently of the action of legislative bodies, the referendum, or provision for referring certain laws already passed to the direct vote of the citizens before they put in force, and the right of 'recall' of public officials before their term expires. The last mentioned has been used but little in modern political life, though it has been made a part of the laws of a few cities and states of the United States. The initiative and referendum have an important place in the political life of Switzerland. In the United States all State constitutions and amendments of the same are referred to popular vote, and in many States, provision is made for a referendum vote on certain laws. The initiative has not yet gained the same place in American politics, though it is growing in favor, particularly in the States and cities of the West.

DEMOCRATIC PARTY: see POLITICAL PARTIES.

DEMOCRITUS, *dē-mŏk′rĭ-tŭs:* illustrious Greek philoso-

pher; b. at Abdera, Thrace, about B.C. 470 or 460. The date of his death is uncertain. He lived, however, to a great age. Of his life, little is known. The statement that he was first inspired with a desire for philosophic knowledge by certain Magi and Chaldæns whom Xerxes had left at Abdera, on his Grecian expedition, is as untrustworthy as that which represents him as continually laughing at the follies of mankind. His extensive travels, however, through a great portion of the East, prove the reality of his desire for knowledge, as does also his ceaseless industry in collecting the works of other philosophers. D. was by far the most learned thinker of his age. He had also a high reputation for moral worth. He appears to have left a strong impression of his disinterestedness, modesty, and simplicity on the mind of the community.

D.'s system of philosophy is known as the *atomic system*. Its essence consists in the attempt to explain the different phenomena of nature—not like the earlier Ionic philosophers, by maintaining that the original characteristics of matter were *qualitative*, but that they were *quantitative*. He assumes, therefore, as the ultimate elementary ground of nature, an infinite multitude of indivisible corporeal particles, *atoms* (see ATOM), and attributes to these a primary motion derived from no higher principle. This motion brings the atoms into contact with each other, and from the multitudinous combinations that they form, springs that vast and varying aggregate called *nature*, which is presented to our eyes. D. did not acknowledge the presence of *design* in nature, but he admitted that of *law*. 'The word *chance*,' he says, 'is only an expression of human ignorance.' He believed strictly in secondary or physical causes, but not in a primary immaterial cause. Life, consciousness, thought, were, according to him, derived from the finest atoms; those images of the sensuous phenomena surrounding us, which we call mental representations, were, according to him, only material impressions, caused by the more delicate atoms streaming through the pores of our organs. The ethical system of D. is both pure and noble. The fragments of his writings that remain contain beautiful, vigorous, and true thoughts concerning veracity, justice, law, order, the duties of rulers, etc.; while, in a spirit not alien to the teaching of Christianity, he looks upon an inward peace of heart and conscience as the highest good, the end and aim of all virtuous endeavor.

DEMOGORGON, n. *dē′mō-gŏr′gŏn* [Gr. *daimon*, a deity: *Gorgōn*, a being whose head was covered with hissing serpents, and whose appearance was so frightful as to turn the spectator into stone]: a deity of mysterious powers, regarded with abject terror, even to the fear of mentioning his name, by the ancient Greeks and Romans, and other inhabitants of Europe. Some suppose the word to be a corruption of the Gr. *Demiourgos* of the oriental systems of magic: see

DEMIURGE. The dreaded 'evil eye' may have had its origin in the abject fear of this mysterious deity.

DEMOISELLE, n. fem. *dĕm′wâ-zĕl′* [F.]: a young lady; a damsel.

DEMOISELLE, *dĕm′wâ-zĕl′* (*Anthropoides*): genus of birds of the family *Gruidæ* (cranes), differing from the true cranes in having the head and neck quite feathered, and the *tertials* of the wings elongated and hanging over the tail, so as in some species to reach the ground. The Demoiselle, or NUMIDIAN DEMOISELLE (*A. Virgo*), is about 3 ft. in length from the point of the bill to the tip of the tail, and the top of its head is about 3½ ft. from the ground. It is remarkable, as are all its congeners, for elegance and symmetry of form, and grace of deportment. The general color of its plumage is gray, but the sides of the head are adorned with two elegant white tufts, formed by elongation of the ear-coverts, and a tuft of blackish feathers hangs down from the breast. The Demoiselle is an African bird, but visits Greece and other parts of the south of Europe. To the same genus belongs the beautiful Stanley Crane (*A. paradisæus*) of the E. Indies, a larger and taller bird, with very long tertials. Notwithstanding its large size, it seems to feed chiefly on the insects of marshes, which it takes when on wing.

DEMOIVRE, *dĕh-mwâvr′*, ABRAHAM: 1667–1754; b. Vitri, Champagne: mathematician. Of French extraction, he spent most of his life in England, whither he fled, with many others, for shelter in 1685, on the revocation of the Edict of Nantes. He long supported himself by private tuition and public lecturing, and, toward the end of his life, by answering questions in chances, play, and annuities, most of his responses, it is said, being given at a coffee-house in St. Martin's Lane, where he passed much of his time. The appearance of Newton's *Principia* incited him to increased devotion to mathematical studies, to which he had always been disposed, and at last he ranked among the leading mathematicians of his time. He was a member of the Royal Societies of London, Berlin, and Paris. The *Philosophical Transactions* of London are enriched by many contributions from his pen; and he was so esteemed by the Royal Soc., that they judged him a fit person to decide the famous contest between Newton and Leibnitz for the merit of the invention of fluxions. He died at London. Among his published works are *Miscellanea Analytica de Seriebus et Quadratis*, etc. (1730, 4to); a work on *The Doctrine of Chances* (1718 and '38), dedicated to Sir Isaac Newton; and another on *Life Annuities* (3d edit. 1750). Demoivre's name is well known from its association with a useful trigonometrical formula—viz., that whatever be the index n. $\cos n\Theta + \sqrt{=1} \sin n\Theta$ is a value of $(\cos \Theta + \sqrt{=1} \sin \Theta)n$.

DEMOLISH, v. *dĕ-mŏl′ĭsh* [L. *demolīrī*, to demolish—from *de*, *molĭŏr*, I build or heap up: F. *démolir*, to demolish; *démolissant*, demolishing; It. *demolizione*, an overturn-

ing]: to throw or pull down; to destroy; to raise; to ruin; to dismantle. DEMOL'ISHING, imp. DEMOL'ISHED, pp. *-ĭsht*. DEMOL'ISHER, n. *-ẽr*, one who. DEMOLITION, n. *dĕm'ŏ-lĭsh'ŭn* [F.—L.]: the act of overthrowing; destruction. Demolition, in military operations, is part of the duty intrusted to the engineers, who proceed in it on strict scientific rules.

DEMON, n. *dē'mŏn* [F. *démon*—from L. *dæmon;* Gr. *daimon*, the tutelary genius of a city or a man, the divinity]: in ancient belief, one of a race of beings intermediate between deity and humanity—some good, some bad: most frequently in modern usage, an evil spirit; a bad genius. DE'MONISM, n. *-ĭzm*, belief in demons. DE'MONOL'ATRY, n. *-ŏl'ă-trĭ* [Gr. *latreia*, service, worship]: worship of demons. DEMONIAC, a. *dĕ-mō'nĭ-ăk*, or DEMONIACAL, a. *dĕm'ō-nī'ă-kal*, pertaining to demons or evil spirits; produced by evil spirits. DEMONIAC, n. *dĕ-mō'nĭ-ăk*, one possessed by a demon. DE'MONI'ACALLY, ad. *-lĭ*. DEMONOLOGY, n. *dē'mŏn-ŏl'ŏ-jĭ* [Gr. *logos*, a discourse]: a treatise on evil spirits. DEMONIAN, a. *dĕ-mō'nĭ-ăn*, in *OE.*, having the nature of a demon.

DEMONETIZE, v. *dē-mŭn'ĕ-tīz* [F. *démonétiser*, to alter the value of a coin, to call it in—from L. *de*, down; *monētă*, the mint, money]: to deprive of value as a medium of exchange, as a coin: to deprive of the power or quality of legal tender. DEMON'ETIZA'TION, n. *-tī-zā'-shŭn*, the act of depriving of value. REMONETIZE, v. *rē-mŭn'ĭ-tīz* [L. *re*, back, again]: to restore to its former position in the currency. REMONETIZATION, n. *rē-mŭn'ĕ-tī-zā'-shŭn*, restoration to its former position in the currency as a coin; the act of reverting to a former metallic standard of the currency, as from *gold* to a former standard of *silver*.

DEMONIACS, *dē-mō'nĭ-aks* (*dæmoniaci, obsessi*) persons whose bodies and whose wills are possessed and controlled by demons. Doubtless the name may have been given by the Jews, anciently, to persons also who were afflicted with epilepsy, hypochondria, or insanity, diseases frequent in the East; such persons were considered as taken possession of by evil spirits. Spells and exorcisms, in consequence, took the place of the healing art in reference to such as were supposed to be demonized, and the Jewish exorcists (demon-banishers) alleged, according to Josephus, that they possessed the necessary magic formulas, wonder-working roots, etc., which had been handed down from antiquity. Other nations, e.g., Persians, Greeks, Romans, held the same belief as to demoniacal possession; but it was more vital and universal among the later Jews than among other nations, on account of the revelation of a holy God which caused in them a deeper consciousness of sin, and on account of their belief as to an organized kingdom of evil, with a chief spirit (Satan) at its head. By reason of their conviction of the mysterious connection between evil and Satan, they expected of the Messiah, the Anointed of God, that he would possess 'power' over demons. While this

fundamental national belief would unconsciously prepare the contemporaries of Christ for regarding his healing in such cases from a *religious* rather than a *scientific* point of view, it does not seem possible from the plain narratives of the gospel, and especially from Christ's words of personal address to the demons, to exclude from the record of these mighty works a direct countervention by Christ of the power which evil spirits had usurped in the physical system and in the realm of the will over the persons whom he healed. He is recorded as healing such persons not by medicines, but by authority which the spirits knew and obeyed. Modern physical science denies demoniacal possession; but one may fully accept the New Testament record on this theme without necessarily affirming the existence of evil spirits. See DEMONOMANIA.

DEMONOMANIA: historically the term refers to the belief that persons exhibiting unusual conduct were possessed by demons and spirits, which in turn must be banished by exorcism through religious or magical ceremonies. Medical practice and theory was affected by these views. The retention of the term in modern usage refers solely to the delusion of such possession entertained by abnormal and disordered minds, and to the conduct typical of such states. States of ecstasy, of insensibility, spasmodic movements, convulsions (the term convulsionaires was applied to a notable outbreak of such an epidemic) are common in such disorders. Hysteria, epilepsy and allied impairments of nervous stability furnish subjects for such conditions, which sometimes spread through communities selecting susceptible victims. Religious epidemics, and the importance attaching to the sayings and conduct of the 'possessed' in ancient times thus receive enlightenment from the modern study of mental disorder

DE'MONS: according to ancient belief, spirits which exercise an influence in the sphere in which man lives. Their dignity and character both have changed greatly in the course of time. Homer calls the *gods* demons, and *daimoniakos* is with him equivalent to *divine*. Hesiod affirms that there are in the air 30,000 demons or ministering spirits, who were the souls of men in the Golden Age; but a proper classification of these is found first in the Pythagorean and Neo-Platonic systems. Aristotle separates the immortals into gods and demons; mortals, into heroes and men. Plato, from whom Aristotle probably received ' the hint of his division, says in his *Symposium* that the demon is a middle intelligence between God and man, and the uniting link which completes the chain of being.' In other places, he informs us that they inhabit the air, wander through the sky, hover over the stars, and tarry on the earth. They also see the hidden issues of the future, and can alter them at their pleasure. Every mortal receives at his birth a particular demon, who accompanies him to the end of his life, and bears his soul to the place of purification and punishment. In general, it

may be said, that the Greeks included the divinity or the deities among the demons, so far as they arranged and disposed the dissimilar fortunes of men. In reference to the actions ascribed to them, the demons were divided into *good* and *bad*—*agathodaimones* and *kakodaimones*. These evil demons were not, however, originally supposed hostile to the divinity or supreme demon. They came from him, and carried out his purpose as truly as the good demons. This was the belief of the earlier Jews also, as we find, for example, from the history of Saul, into whom God repeatedly sent an 'evil spirit,' i.e., a demon, in the classical and not in the mediæval sense of the term. The demonism of the Romans consisted chiefly in the worship of departed spirits: see LARES: MANES: PENATES. The origin of the doctrine of demons is to be sought in the East. In the teaching of the Hindus, who, besides the highest Deity, Brahma, recognize a countless number of divine agents or messengers, the demons are called *deitjas*. In Parseeism, or the religion of Zoroaster, however, this doctrine is found in its most systematic and elaborate development. Indeed, the Persians and Jews *alone* among the nations of the Old World had the conception of evil spirits headed by a chief demon, a Satan, who was over them as a god. To the genii or demons in the kingdom of Ormuzd (Light), who are called *Izeds*, stand opposed the genii in the kingdom of Ahriman (Darkness), who are called Dews. According to the belief of the Egyptians, the circuit of the world (the sea, the earth, the air) was filled with demons, who ruled the elements, exercised mysterious influence over stones, metals, and plants, and had the souls of men in their power. Although the belief in demonism came to Greece from various countries, and by various channels, yet the principal channel by which they received it was through Egypt. The Jews derived it—at least to a great extent—directly from the Persians, during the time of the Babylonian captivity; and though they were acquainted with 'angels' from an early period, angelology, beyond all question, received its first elaborate treatment after the return from exile. The dualism which characterizes the system of Zoroaster made itself conspicuous then. According to the Jewish demonology,—much of which was from some other source than their Scriptures—there were seven good demons who formed the council of Jehovah, and ever stood before his throne, while the evil demons have at their head Satan or Asmodi. After the Jews had, under the Seleucidæ and Ptolemies, entered into extensive commercial relations with the Egyptians and Greeks, especially in Alexandria, Græco-Egyptian conceptions were associated with those derived from Persia. When Christ made his appearance in the world, the Jewish conception of a demon as an 'evil spirit' *not* from God, had become definitely fixed and popular. This narrowing of the application of the word may have partly originated in the wish to glorify Judaism at the expense of paganism. It would gratify the national

pride, which was strongest when it had least to boast of, to include the *demons*, i.e., the spirits both good and bad, of all the surrounding Greek-speaking nations, in one black category, and so make them stand as the representatives of evil. The early Christian writers, instead of denying the existence of the heathen gods, turned them into demons, who, acting under the inspiration of their wicked master, had cheated the souls of men, and so made them also worship Satan unawares: see DEVIL. The doctrine of the early church concerning the fall of the demons, based on Genesis vi. 2, and concerning their activity, seems to have mingled Jewish and Platonic notions, Christianized however by the belief that all their action is controlled by the supreme power of the Son of God. Among the Germanic races, during the middle ages, the idea of a person's being taken possession of by demons, led to the other idea of a covenant with the devil, of which the legend of Faust is a well-known example. See UKERT, *Ueber Dämonen, Heroen und Genien* (Leip. 1850); Conway's *Demonology and Devil Lore* (1878).

DEMONSTRATE, v. *dĕ-mŏn'strāt* or *dĕm'ŏn-strāt* [L. *demonstrātus*, pointed out, shown fully—from *de*, *monstro*, I point out: F. *démontrer;* OF. *demonstrer*]: to show or prove to be certain; to prove beyond the possibility of doubt; to show the dissected parts of a body for the purposes of instruction. DEMON'STRATING, imp. DEMON'STRATED, pp. DEMONSTRATOR, or -TER, n. *dĕm'ŏn-strā'tẽr*, one who; in *anat.*, one who exhibits and explains the parts of a body when dissected. DEM'ONSTRA'TION, n. *-strā'-shŭn* [F.—L.]: the highest degree of evidence; certain proof to establish a fact or proposition beyond the possibility of doubt; an exhibition of the dissected parts of a body; a real or feigned movement of troops against the enemy, either to lead him to develop his force, thus showing his strength, or to lead him to divide his force as if to meet attack from various quarters. DEMONSTRABLE, a. *dĕ-mŏn'-stră-bl* [F.—L.]: that may be proved beyond doubt or question. DEMON'STRABLY, ad. *-blĭ*. DEMON'STRABLENESS, n. *-bl-nĕs*. DEMON'STRATIVE, a. *-stră-tĭv*, proving by certain evidence; energetically expressing feelings or sentiments; forcibly frank. DEMON'STRATIVELY, ad. *-lĭ*, in a manner beyond doubt; in a manner energetically frank. DEMON'STRATIVE'NESS, n. DEMONSTRATIVE PRONOUN, a pronoun used to point out with precision the particular object to which it refers; the demonstrative pronouns are *this* (pl. *these*), and *that* (pl. *those*). SYN. of 'demonstrate': to show; exhibit; display; indicate; evince, argue; manifest.

DEMONSTRATION in logic: the process of proving the truth or falsity of some theory. Demonstration is of two orders, viz.: deductive and inductive. Deductive demonstration starts from a principle accepted as true. The consequences of this principle with reference to some concrete set of facts are made clear and the reactions of the facts in certain prescribed manners are exhibited. Thus,

if I know that hydrogen and oxygen when combined in certain quantities produce water, it is a deduction from this truth that if I analyze any given body of water into its constituents I can derive from these the characteristic reactions of hydrogen and of oxygen. Inductive demonstration, on the other hand, starts from observed facts and in these proceeds to show the presence of some previously unknown principle. Thus the series of experiments made by Darwin with reference to the supposed subsidence of stones into the earth showed that instead of the stones sinking, their disappearance was due to a slow rising of the earth and that this was further occasioned by the activity of earthworms. He traced not only the presence of the earthworms, but showed by tests that they threw off silt in sufficient amounts to account for the covering of the stones in the space of time actually required for their disappearance. Further, he made the concrete test of submitting a field to the activities of the earthworms and found that his calculations were precisely carried out in fact. It is to be noted that in deductive and inductive demonstration alike certain responses are predicted and tested. It is *prediction* which is the root principle of theory and *testing* which is the essential of demonstration. See DEDUCTION AND INDUCTION.

DEMONSTRA'TION in Mathematics: proof of any proposition which excludes doubt; such are demonstrations of the propositions in Euclid's *Elements*. The method of demonstration in mathematics is the same with that of drawing conclusions from principles in logic, and is usually syllogistic, the premises being omitted to be stated at each turn. The principle of *reductio ad absurdum* also is employed. See REASONING: SYLLOGISM.

DEMONTE, *dā-mŏn'tā:* town in the s.w. of Piedmont n. Italy; on the Stura, 15 m. s.w. of Coni. Pop. 6,000.

DEMORALIZE, v. *dĕ-mŏr'ăl-īz* [F. *démoraliser*, to corrupt the morals—from F. *dé* for L. *dis*, apart; *morale*, morals: L. *de*, *mōrēs*, usages, customs]: to corrupt morals; to destroy or lessen moral qualities; to cease for a time to be under the regulating control of the usual social and moral influences. DEMOR'ALI'ZING, imp. DEMOR'ALIZED, pp. *-ăl-īzd*. DEMOR'ALIZA'TION, n. *-ī-zā'shŭn*, corruption of morals; the state or condition of an army after a defeat when confidence and discipline are in abeyance; the state of any body of individuals when the usual social restraints and moral influences have ceased to exercise the usual control.

DE MORGAN, *deh mor'gan*, AUGUSTUS: 1806-1871, Mar.; b. in the small Indian island of Madura, off the n. e. coast of Java. His father was an officer in the British army. He was educated at Trinity College, Cambridge, and took his degree B.A. 1827, when he was fourth wrangler. He was appointed first prof. of mathematics in the Univ. College, London. In 1831, he resigned, but was reappointed 1836, and continued in that capacity till his

death. Previous to this appointment he had turned his mathematical attainments to account in the service of some of the London assurance companies, and continued throughout his life the confidential adviser of some of the most important of these associations. His writings are very numerous. Besides being a mathematician of the first order, he was extensively and minutely versed in the history of mathematical and physical sciences. He also applied himself to the development of the Aristotelian or 'Formal' Logic, to which he gave so symbolical a shape as to make it seem like a branch of Algebra. He wrote likewise on the calculation of Insurances and on the Decimal Coinage. The following are a few of his works: *Elements of Arithmetic* (1830); *Elements of Algebra, preliminary to the Differential Calculus* (1835); *Elements of Trigonometry and Trigonometrical Analysis, preliminary to the Differential Calculus* (1837); *Essay on Probabilities, and on their Application to Life Contingencies and Insurance Offices* (1838); *Formal Logic, or the Calculus of Inference necessary and probable* (1847); *Arithmetical Books, from the Invention of Printing to the Present Time, being brief notices of a large number of works drawn up from actual inspection* (1847). De Morgan was also the author of treatises on the Differential and Integral Calculus; and contributed largely to the *Penny Cyclopædia*. See *Memoir of Augustus de M., by his Wife* (1882).

DEMOS, *dē′mos* [Gr. the people]: name of the districts in anc. Attica, which numbered first 100, afterward 174; each had its own assemblies and officials.

DEMOSTHENES, *de-mŏs′the-nēz:* greatest orator of Greece, and indeed of the ancient world: b. Athens. The date of his birth is doubtful. Fynes Clinton assigns it to B.C. 382; Thirlwall and other good authorities, to 385. He died B.C. 322. His father, a wealthy manufacturer, died early, leaving his fortune and children to the care of three guardians, who cruelly abused their trust. As soon as Demosthenes came of age, he resolved to prosecute at law these unfaithful stewards. He gained his case, but much of the property had already been squandered, and he recovered only enough to save him from poverty. His success in this and some other civil causes fixed his resolution to devote himself to public life, and he set himself to master the law and politics of his country with a labor and perseverance almost without parallel. His first care was to conquer the physical disadvantages under which he labored. His health was naturally feeble, his voice harsh and tuneless, and his action ungraceful. To strengthen his lungs, he used to climb steep hills, reciting as he went, or declaim on the shores of the sea in stormy weather. To improve his delivery, he took instructions from Satyrus the actor, and did not even disdain to study effects before a mirror. His feebleness of health he never fairly overcame, but he obviated the defects of his early training by the severest study for months at a time without interruption.

DEMOSTHENES.

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Demosthenes began to take part in public affairs in the 106th Olympiad, when he was between 27 and 30 years of age, and from that time till his death, his history is the history of Athens. The states of Greece were at this time miserably weak and divided, and had recklessly shut their eyes to the dangerous encroachments which Philip of Macedon was making on their common liberties. The first period of Demosthenes' public life (extending over ten years from B.C. 356) was spent in warning his countrymen to abate their mutual jealousies, and unite their forces against the common enemy, whose crafty and grasping policy he exposed so nobly B.C. 352 in the oration known as the first Philippic. Three years later, Philip became master of Olynthus, the last outpost of Athenian power in the north, which, in a series of splendid harangues—the three Olynthiacs—Demosthenes had implored his countrymen to defend. Peace was now necessary for Athens; and Demosthenes was among the ambassadors sent to negotiate with the conqueror; but Macedonian gold had done its work, and Demosthenes, as incorruptible as he was eloquent, saw with despair that Philip was allowed to seize Thermopylæ, the key of Greece, and become a member of the Amphiotyonic League. The peace lasted six years, during which Philip's incessant intrigues were exposed and denounced by Demosthenes in orations hardly less remarkable for political wisdom than for matchless eloquence. The most important of these were the Second, Third, and Fourth Philippics; and the speeches on the 'Misconducted Embassy,' and 'The affairs of the Chersonese.' When war broke out B.C. 340, Demosthenes introduced several important reforms into the army and navy, and showed such powers of vigorous administration, that Philip was baffled for a time. The struggle was closed in B.C. 338 by the battle of Chæroneia, which laid Greece prostrate at the feet of the Macedonians. Only once after that event did Demosthenes appear on the scene of his previous triumphs. But on that occasion he delivered, in defense of his friend Ctesiphon, his oration 'For the Crown,' which the almost unanimous verdict of critics has pronounced the most perfect masterpiece of oratory that ancient or modern times have seen. Æschines, his life long enemy, against whom this speech was delivered, was so overwhelmed by it, that he quitted Athens, and spent the remainder of his life in exile. In B.C. 324, Demosthenes was accused of taking part in a revolt against the Macedonian domination, and thrown into prison, whence he escaped, and fled into exile. The death of Alexander the Great in the following year brought a gleam of hope to the Athenians; and Demosthenes, recalled from exile, was again at the head of affairs. Once more the power of Macedon prevailed. Demosthenes was demanded up by the conquerors. Finding escape impossible, the hunted orator sought an asylum in the temple of Neptune, in the island of Calaurea. Before his

pursuers overtook him, he had died, as was generally believed of poison administered by his own hand.

The personal character of Demosthenes is one which it is scarcely possible to praise or admire too much. His dauntless bravery, the stainless purity of his public and private life, his splendid and disinterested patriotism, and his services as a statesman and administrator, entitle him to a place among the highest and noblest men of antiquity. On his merits as an orator, suffice it to say, that the educated of all ages subsequent have, with scarcely a dissentient voice, assigned him the highest place. In energy and power of persuasion, in penetration and power of reasoning, in the adaptation of the parts to the whole in beauty and vigor of expression, in strong and melodious language, he surpassed all his predecessors. Everything in his speeches is natural, vigorous, concise, symmetrical. This alone can explain his great influence over his contemporaries. Among the oldest editions of the orations the best is that of Paris, 1570. The first edition of his complete works, Greek and Latin, was edited by Hieronymus Wolf (Basel, 1549). The edition by Bekker (Leipsic, 1855) is considered among the best of the modern ones. See Schäfer, *Demosthenes und seine Zeit.*

DEMOTIC, a. *dĕ-mŏt'ĭk* [Gr. *dēmotĭkos*, pertaining to the people—from *dēmos*, the people]: pertaining to the people; applied to a variety of writing in common use among the Egyptians; a simplified form of the anc. Egyptian hieroglyphic writing. DEMOTIC ALPHABET: see HIEROGLYPHICS.

DEMOTICA, *dė-mŏt'ė-kâ:* town of European Turkey, province of Adrianople, 22 m. s. of Adrianople. It is on the Maritza, here navigable for small vessels, and is defended by a citadel. It contains an old palace, is the seat of a Greek bishop, and has manufactures of silks, woolens, and pottery. Charles XII. of Sweden, who after the battle of Pultowa, first found a refuge at Bender, afterward removed to Demotica, where he remained for some time. Pop. 8,000.

DEMPSTER, n. *dĕm'stėr*, or DEMSTER, or DEEMSTER [AS. *deman*, to deem, to form a judgment]: in the *Channel Isles* and in the *Isle of Man*, a name given to a judge; in *Scot*, formerly an officer who was required to repeat the sentence pronounced by the court.

DEMP'STER, CHARLOTTE LOUISA HAWKINS: Scottish novelist; b. Forfarshire, Scotland, 1835. She has been a frequent contributor to English periodicals. Her first book was *The Hôtel du Petit St. Jean: a Gascon Story* (1869); the second, *Véra* (1872), established her reputation. Her other works include: *Essays* (1872); *Iseult* (1875); *Blue Roses* (1877); *Within Sound of the Sea* (1878), a Scottish story; *Ninette* (1888), an idyl of Provence.

DEMPSTER, *dĕmp'ster*, JOHN, D.D.: 1794, Jan. 2—1863, Nov. 28; b. Florida, N. Y.: educator. He was a son of the Rev. James Dempster, an associate of John Wesley, and losing his father when a child, became a pedler. He was

converted 1812, entered the itinerant ministry of the Meth. Episc. Church 1816, was a missionary in Buenos Ayres 1835-42, a founder of the Biblical Institute at Concord, N. H., and its prof. of theol. 1847-54, and founder of the Garrett Biblical Institute at Evanston, Ill., 1854, and senior prof. from 1855 till his death. He received his degree from Wesleyan Univ. 1848.

DEMPSTER, *dĕmp'ster*, THOMAS: professor, famous for learning; miscellaneous and voluminous writer: abt. 1579-1625, Sep. 6; b. Muiresk, Aberdeenshire. He studied at Cambridge; went to France while young to perfect his education, and at Paris obtained a professorship in the college of Beauvais, where he showed a very quarrelsome temper, engaging, it is said, almost daily in some brawl. One of these unseemly disturbances resulted in Dempster's having to retreat to England. He returned to France with a beautiful wife, whom he had married in England. Crossing the Alps, he obtained a second professorship at Pisa, with a handsome salary; but here, however, the infidelities of his wife marred his peace; and he removed to Bologna, where he became prof. of *belles lettres*, and where his wife completed her shame by eloping with 'one or more' of his students. Poor Dempster seems to have been fond of this wanton, for he took the trouble of attempting the capture of the fugitives. He failed; and died at Butri, near Bologna. Dempster wrote numerous treatises, among which was *Historia Ecclesiastica Gentis Scotorum*—a work in which his desire to magnify the merits of his country often induced him to forge the names of persons and books that never existed, and to unscrupulously claim as Scotchmen, writers whose birthplace was doubtful, or who were known to be natives of England, Wales, Ireland, and even France and Germany; nevertheless, the book has some value. It was reprinted for the Bannatyne Club 1829.

DEM'TER: see DEVENTER.

DEMULCENT, a. *dĕ-mŭl'sĕnt* [L. *demulcen'tem*, stroking down—from *de*, *mulcĕō*, I soothe gently]: softening; mollifying: N. that which softens; in *medicine*, any bland and lubricating liquid substances, taken by the mouth, for soothing irritation of the mucous membranes, and promoting the dilution of the blood, and the increase of the secretions. Demulcents are composed chiefly of starch (q.v.), or gum (q.v.), or of substances containing these, dissolved in water, sometimes also of oily matters, or the white of eggs, and other albuminous or gelatinous substances largely diluted. The decoction of althæa, or marsh-mallow, is a favorite form of demulcent.

DEMUR, v. *dĕ-mėr'* [F. *demeurer*, to stay—from L. *demŏrārī*, to delay—from L. *de*, *mora*, delay: It. *dimorare*]: to delay by raising doubts and objections; to hesitate; to pause; to scruple; in *law*, to dispute formally the sufficiency of the pleading of the other side: N. a pause; a scruple; hesitation as to the propriety of proceeding. DEMUR'-

RING, imp. DEMURRED′, pp. *-mėrd′*. DEMUR′RER, n. one who; in *law*, an issue, raised on a question of law, between plaintiff and defendant, by which the progress of the suit is delayed. DEMUR′RABLE, a. *-ră-bl*, that may be demurred to. DEMURRAGE, n. *dĕ-mŭr′rāj*, an allowance made to the owners of a ship by the freighters for delay.

DEMURE, a. *dĕ-mūr′* [F. *dès* or *de*, from; *mœurs*, manners or behavior: OF. *de murs*, of good manners—from L. *de*, of; *morēs*, manners]: grave; affectedly modest; bashful: V. in *OE.*, to look demurely or with affected modesty. DEMURE′LY, ad. *-lĭ*, in a manner affectedly modest. DEMURE′NESS, n. soberness; affected modesty.

DEMUR′RAGE, in the Law-merchant; allowance made to the master or owners of a ship, by the freighter, when she is detained in port by the latter beyond the specified time of sailing, for the freighter's convenience. A certain number of days, called running or working days, are allowed for receiving and discharging cargo, and it is usually stipulated in charter-parties that the freighter may detain the vessel, either for a specified time, or as long as he pleases, on paying so much *per diem* for over-time. All the ordinary causes of detention, such as port-regulations, the crowded state of the harbor, and the like, are at the risk of the freighter, and demurrage must be paid, though it be proved that the delay was inevitable by him (*Commentaries*, V. i. 431, Shaw's ed.). 'In short,' says Mr. Bell, 'the rule is, that during the loading or unloading of the ship, the merchant runs all the risk of interruptions from necessary or accidental causes; while the ship-owners have the risk of all interruptions from the moment the loading or unloading is completed.' But demurrage is not due where the delay arose from detention of the ship by a public enemy, or from hostile occupation of the port; and it cannot, of course, be claimed where the fault lay with the owners themselves, or the master, or crew of the vessel. The demurrage ceases as soon as the vessel is cleared for sailing, though she should be prevented from actually doing so by adverse winds. When the days of demurrage are limited by special contract, and the ship is detained beyond them, the sum due as demurrage under the contract will be taken as the measure of the loss for the further time which may be claimed in the form of damages. It will be open, however, to both parties to show, that the rate thus fixed *per diem* is either too high or too low. Where there is no stipulation beyond the ordinary agreement that the usual time shall be allowed for loading and unloading, the master will be entitled, when this period expires, either to sail or to claim damage for detention.

DEMUR′RER, in Law: exception taken by one party in a suit or action to the sufficiency in point of law of the case of the opposite party. *At Common Law*, each party might demur to the sufficiency of the pleading of the opposite party. The party whose pleading was demurred to might either amend or put in a joinder in demurrer. A *demurrer in equity*, like a demurrer in law, admitted the

facts of the case, but stated objections to the form of the bill in Equity (q.v.), or the sufficiency of the plaintiff's case to sustain the remedy craved.

Demurrer to evidence is also a form of procedure which existed in both common law and equity practice. In the former it had long been almost obsolete; and in its place was substituted a motion for a new trial. It may arise on a trial at bar or at Nisi Prius (q.v.). It admits the facts proved, but objects that they are not sufficient to sustain the issue. In equity, a demurrer to evidence is where a witness refuses to answer a question put to him by direction of the court. The objection is then taken down in writing, and is argued before the judge by whom the interrogatories were settled.

Demurrer to a criminal indictment also is almost obsolete.

DEMY, n. *dĕ-mī′*, plu. DEMIES, *dĕ-mīz′* [F. *demi*, half—from L. *dimĭdĭum*, half]: a particular size of paper between royal and crown; in *printing-paper*, a demy sheet measures 22 inches by 17½; in *writing-paper*, 22 by 15½. DEMIES′, plu. the title of certain persons on the foundation of Magdalene College, Oxford—really a contradiction of L. *dĕmĭ-socĭŭs* = half a fellow, answering to scholars in other colleges.

DEMY-LAUNCE, n. *dĕm′ĭlâns* [L. *dimĭdĭŭm*, half; OE. *launce*, a lance]: in *OE.*, an anc. 'hobbler' or horseman in light armor.

DEN, n. *dĕn* [AS. *dene* and *denu*, a cave, a den: old Dut. *denne;* Ger. *tenne*, a floor]: a cave or hollow place in the earth; a cave; the lair of a wild beast; a place of concealment; a wretched dwelling place.

DENAIN, *dė-năng′:* town of France, dept. of Nord, on the left bank of the Scheldt, about five m. w. of Valenciennes. Its situation, in the centre of an extensive coal-field, and in the immediate vicinity of iron mines, gives it unusual facilities for smelting iron, and its works of this kind are of considerable importance. Denain is a regular and well-built town, and has a good market. It has some manufactures of beet-root sugar. Here the allies under Lord Albemarle were defeated by the French under Maréchal de Villars, 1712, July 24. Pop. 18,258.

DENARIUS, n. *dē-nā′rĭ-ŭs* [L. *denārĭŭs*—from *dēni*, ten, because originally equal to 10 asses]: principal silver coin among the anc. Romans, which after the reduction of the *as* equalled 16 asses. It was the penny of the authorized version of the New Test. It was first coined B.C. 269. Its weight at the end of the Roman commonwealth is estimated at 60 grains, while under the empire the weight was 52.5 grains of silver. The value of the commonwealth denarius was thus rather more than 8½*d.*, equalling abt. 17 cents; and of the later period (in use at the time of Christ) abt. 7¾*d.;* equalling a little more than 15 cents. DENARY, a. *dĕn′ėr-ĭ*, containing ten: N. the number ten. DENARY SCALE, see NOTATION.

DENATIONALIZE, v. *dĕ-năsh′ŭn-ăl-īz′* [L. *de*, and *nationalize*]: to deprive of national character or rights. DENA′TIONALI′ZING, imp. DENA′TIONALIZED, pp. *-īzd.*

DENAY, v. *dĕ-nā′* [L. *de*, and *nay*]: in *OE.*, to say nay to anything; to deny: N. denial. DENAY′ING, imp. DENAYED, pp. *dĕ-nād′*.

DENBIGH, *dĕn′bē:* parliamentary and municipal borough, the county town of Denbighshire, n. Wales, in the n. of the county, 30 m. w. of Chester, 213 m. n.w. of London. It stands in the hundred of Isaled, near the middle of the vale of the Clwyd, on the sides and at the bottom of a rugged steep limestone hill, crowned by the imposing ruins of a castle built in 1284 by Henry Lacy, Earl of Lincoln, where there had stood fortifications erected by William the Conqueror, and where there are traces of still earlier castellated remains. The newer part of Denbigh was built at the bottom of the hill, after the destruction and desertion of a great part of the town on the top of the hill, about 1550. Denbigh has manufactures of shoes, and leather for the English markets and export trade; but it is more a place of pleasant retired residence than commerce. In 1645, Charles I. took refuge in the castle after the battle of Rowton Heath. The garrison surrendered to the parliamentary forces, after a siege of two months, and the castle was soon afterward dismantled. The fortifications have an area of a sq. mile in extent. A lunatic asylum for the five counties of n. Wales was erected near the town 1848. A noble institution for the maintenance and education of 50 female inmates, of whom 25 are orphans, was built in the town, and opened 1860, with funds in the hands of the Drapers' Company of London, from money left to them 1540 by Thomas Howell, a Welshman. It has an endowment of about £1,500 a year. The charter of Henry De Lacy is preserved among the corporate archives. Pop. 6,412.

DENBIGHSHIRE, *dĕn′bē-shĕr:* county of n. Wales, on the Irish Sea, and between the Dee and the Conway. It is 41 m. long, with an average breadth of 17 m.; 603 sq. m.; has 8 miles of coast, and is the sixth in size of the Welsh counties. The surface is partly rugged and mountainous, with some beautiful and fertile vales, as the vale of the Clwyd, 20 miles by 7. In the north is a horseshoe range of hills, 65 m. long, convex to the coast. The highest hill is Cader Fromwen, 2,563 ft.; and many others rise above 1,500 ft. The rocks are chiefly Silurian clay and graywacke slates, with some granite and trap, and bands of Devonian, Carboniferous, and Permian strata. There occur coal, iron, slates, flags, millstones, lime-stone, lead, and cop per. The chief rivers are the Dee, Conway, Elwy, and Clwyd. The Rhaiadr waterfall is 200 ft. high in two parts. Llangollen vale is famed for romantic beauty and verdure, amid hills of savage grandeur. The climate is mild in the lower parts, but cold and bleak among the hills, where small hardy sheep and ponies are reared. About two-thirds of Denbighshire are under cultivation; its corn, cheese, but-

ter, and live-stock are greatly esteemed. It is well timbered. Salmon are caught in the rivers. Denbighshire is divided into 6 hundreds, 3 poorlaw unions, and 64 parishes, in the diocese of Bangor and St. Asaph. The chief towns are Denbigh, Wrexham, Ruthin, Holt, Llangollen, Llanrwst, Abergele, and Ruabon. Denbighshire returns three members to parliament, two for the county, and one for Denbigh. Denbighshire was anciently occupied by the Ordovices, a powerful tribe, not entirely subdued by the Romans till the time of Agricola. Of British or pre-Roman remains there still exists tumuli, two cistvaens or stone cells, barrows, and forts. Pop. 131,588.

DENBY, Charles, an Amer. diplomatist; b. 1830; served through the civil war, attaining the rank of col.; was appointed min. to China in 1885, where he remained for 13 years; was made mem. of the commis. to investigate the conduct of the war with Spain in 1898; and a member of the Philippine Commission in 1899. During the war between China and Japan the Japanese government placed its interests in China in his hands.

DENDERAH, *dĕn'dėr-â* [Gr. *Tentyra,* Coptic *Tentore,* probably from *Téi-n-Athor,* the abode of Athor]: ruined town of Upper Egypt, near the left bank of the Nile; lat. 26° 13′ n., long. 32° 40′ e. It is famed for its temple, dating from the period of Cleopatra and the earlier Roman emperors, one of the finest and best preserved structures of the kind in Egypt. The principal temple measures 220 ft. in length by about 50 in breadth, and has a noble portico supported on 24 columns. The walls, columns, etc., are covered with figures and hieroglyphics. Prominent among the former is that of Athor or Aphrodite, to whom the temple was dedicated. On the ceiling of the portico are numerous mythological figures arranged in zodiacal fashion, long regarded as a representation of the zodiac; but the absence of the crab has led some recent archeological travellers to doubt whether the figures were intended to have any reference to astronomy. There are many other sacred buildings at Denderah, including a temple of Isis. All, with the exception of one propylon, are surrounded by a sun-dried brick-wall, 1,000 ft. long on one side, and in some parts 35 ft. high.

DENDERMONDE, *dĕn-dėr-mōn'dė* [Fr. *Termonde*]: town of Belgium, province of e. Flanders, at the confluence of the Dender and the Scheldt, 18 m. e. of Ghent. Dendermonde, which is said to have originated in the 8th c., is fortified, and has a citadel dating from 1584, and possessing the means of laying the surrounding country under water in case of attack. Louis XIV. besieged it in vain 1667, but Marlborough, aided by a long drought, succeeded in taking it 1706. In connection with Marlborough's siege, Dendermonde is mentioned frequently in Sterne's *Tristram Shandy.* The principal buildings of Dendermonde are the town-house and several churches, most noteworthy of which is the church of Notre Dame, a very old edifice, containing two admired pictures of Vandyck. The manu-

factures are woolens, lace, cotton-yarn, etc., and there is a large weekly market for the disposal of the agricultural produce of the neighborhood. Pop. 9,298.

DENDRASPIDÆ, n. plu. *dĕn-drăs′pĭ-dē* [Gr. *dendron*, a tree; *aspis*, an asp]: family of snakes, natives of s. Africa. The fangs are very long, poisonous, and erect. *Dendraspis angusticeps*, the narrow-headed dendraspis, is of an olive-brown color, tinged with green; it is about six feet long, has a thin long body, and is a good climber.

DENDRERPETON, *dĕn-drĕr′pĕ-ton:* small lizard-like batrachian, found by Lyell and Dawson in the interior of the hollow trunk of an upright *sigillaria* in Nova Scotia. The tree was about two ft. in diameter, and consisted of an external cylinder of coal, and an internal axis of mud and sand, cemented together with fragments of wood into a solid rocky mass. In this were discovered the shell of a *pupa*, the first air-breathing mollusk met with in the coal and the bones of a small reptile probably 2½ ft. long. It was described and figured by Owen as D. *Acadianum*. He showed it to be nearly related to *Archegosaurus*, from the plicated structure of the teeth, the sculpturing of the broad cranial plates, and the structure and proportion of certain limb-bones. It received its name, 'tree-lizard,' from its having been found in a tree; and this was supposed to show that it had arboreal habits; it is, however, probable that the remains had been washed in with the mud and sand which form the matrix in which they are preserved.

DENDRIFORM, a. *dĕn′drĭ-fawrm* [Gr. *dendron*, a tree; L. *forma*, shape]: in structure resembling a tree or shrub. DENDRIT′IC, a. *-drĭt′ĭk*, or DENDRIT′ICAL, a. *-ĭ-kăl*, resembling a tree or shrub. DEN′DRACHATE, n. *-dră-kāt* [Gr. *achātēs*, an agate]: an agate exhibiting in its sections the forms or figures of vegetable growths. DENDRER′PETON, n. *drĕr′pĕ-tŏn* [Gr. *erpĕton*, a reptile]: a small lizard-like fossil animal of the coal-measures, found in the interior of a fossil trunk of a tree. DEN′DRODONTS, n. plu. *-drō′dŏnts* [Gr *odous*, or *odonta*, a tooth]: a fossil family of fishes whose teeth, when cut, present numerous fissures spreading like the branches of a tree. DEN′DROID, a. *-droyd* [Gr. *eidos*, form]: resembling a tree or shrub. DEN′DROLITE, n. *-drō-līt* [Gr. *lithos*, a stone]: in *geol.* a general term for any fossil stem, branch, or other fragment of a tree. DENDROL′OGY, n. *drŏl′ŏ-jĭ* [Gr. *logos*, a discourse]: that part of systematic botany which treats of the natural history of trees and shrubs. DENDROL′OGIST, n. one who. DEN′DROM′ETER, n. *-drŏm′ĕ-tĕr* [Gr. *metron*, a measure]: an instrument for measuring trees without climbing them.

DENDRITE, *dĕn′drīt:* peculiar branching mineral crystallization on the surface of the fissures and joints, or in the substance, of rocks, having the appearance of moss, and often mistaken for fossil plants. The hydrous oxide of manganese is the mineral that generally assumes this form occurring frequently in great abundance in limestone, steatite, trachyte, and other substances.

DENDROBIDÆ, n. plu. *dĕn-drō′bĭ-dē* [Gr. *dendron*, a tree; *bios*, life]: family of orchids, of the tribe *Malaxeæ*. DENDRO′BIUM, n. *-ŭm*, genus of orchids, typical of the family *Dendrobidæ*.

DENDROBIUM, *dĕn-drō′bi-ŭm:* genus of epiphytic plants with over 200 distinct species, common to all the tropical parts of Asia and Australia. It attaches itself to the bark of trees and the rough surface of rocks, and spreads rapidly in wavy festoons. The flowers are purple, yellow, and green in color, very fragrant, and of curious forms. The genus varies greatly in the character of its bloom, some of the species being among the finest of the epiphytes. Among this class are *D. nobilis*, *D. chrysanthemum*, *D. gibsoni*, and *D. densiflorum*.

DENDROCŒLA, n. *dĕn-dro-sēl′a* [Gr. *dendron*, a tree; *koilos*, hollow]: section of *Scolecida*, belonging to the sub-ord. *Planarida*. They have the intestines branched or arborescent, and the body flat or broad.

DENDROCOLAPTES, n. *dĕn-dro-ko-lăp′tēz* [Gr. *dendron*, a tree; *kolaptō*, I peck]: the hook-billed creepers, a genus of birds belonging to the sub-family *Dendrocolaptinæ* and family *Certhidæ*, or creepers. DENDROCOLAPTI′NÆ, n. *-tī′nē*, sub-family of birds belonging to the family *Certhidæ*, or Creepers; natives of S. America.

DENDROCYGNA, n. *dĕn-dro-sĭg′na* [Gr. *dendron*, a tree; L. *cygnus*, a swan]: the tree ducks, a genus of aquatic birds belonging to the family *Anatidæ*. The toes are long and project beyond the membrane, enabling them to perch on trees, whence the name.

DENDROL′AGUS, a genus of marsupial animals, popularly known as tree-kangaroos, from their habit of living in trees. Their fore legs are not much shorter than the hind ones. Four species are known, one of them (*D. lumholtzi*) being a native of northern Queensland, and the other three (*D. ursinus*, *inustus*, and *dorianus*) natives of the island of New Guinea.

DENDROLITES, *dĕn′dro-līts:* petrified stems or branches of trees or shrubs, which occur in all parts of the world in the formations called Secondary, especially in the Coal formation. They may be regarded as the remains of a former creation. They are of very various magnitude. In some places, gigantic stems are found, often observed to have branches, fruit, and even leaves—these, however, only as impressions—while in other places only fragments occur, which, however, belong to trees having nothing in common with those now growing in the same regions—as, for example, beautiful stems of palms at Chemnitz in Saxony, etc. Such woods are generally changed into agate, or into pitchstone, when they occur in ancient strata altered by volcanic fire. Concerning the question of their origin, opinions are divided. Many of them are so hard and beautifully colored, that they are cut and employed for all artistic purposes. When cut into very thin plates, they exhibit under the microscope the structure of the wood so

perfectly, that it is possible for botanists to determine not only the natural order or family of plants to which it belongs, but even the genus and species. They belong mostly to the *Filices*, *Cycadeœ*, and *Coniferœ*. Brongniart was among the first investigators of this department of science; later, Unger and Göppert were especially distinguished.

DENDROMUS, n. *dĕn'dro-mŭs*, or DEN'DROMYS, *-mĭs* [Gr. *dendron*, a tree; *mus*, a mouse]: genus of rodent quadrupeds, belonging to the mouse family, and consisting of a single species, *D. typus*, an animal about three inches and a-half long. with a tail four and a-half inches. It frequents the branches of trees, where it forms its nest, and brings forth its young. It is a native of s. Africa.

DENDROPHIS, *dĕn-dro-fĭs* [Gr., tree-snake]: genus of serpents of the family *Colubridœ*, remarkable for their extremely slender form, their beautiful colors, and the liveliness of their movements. Their eyes are very large and prominent. They are widely distributed over the warm parts of the worid; none are found in Europe. They live chiefly among the branches of trees, and insects are their principal food.

DENDROPLEX, n. *dĕn'dro-plĕks* [Gr. *dendron*, a tree; *plēxis*, a stroke, a blow]: genus of birds belonging to the *Certhidœ*, or Creeper family.

DENDROSOMA, n. *dĕn-dro-sō'ma* [Gr. *dendron*, a tree; *sōma*, a body]: genus of rhizopoda, belonging to the family *Acinetina;* body conical, thick, soft, and smooth.

DENDROSTRÆA, n. *dĕn-drŏs-trē'a* [Gr. *dendron*, a tree; *ostreon*, an oyster]: genus of mollusks belonging to the oyster family.

DENDRYPHIUM, n. *dĕn-drĭf'ĭ-ŭm* [Gr. *dendron*, a tree; *phuē*, growth]: genus of hyphomycetous fungi, consisting of molds growing on dead herbaceous plants.

DENEHOLES, n. plu. *dān'hōlz* [AS. *denn*, a cave; Eng. *hole*]: ancient artificial excavations, consisting of a round vertical shaft, from 2 ft. 6 in. to 3 ft. in diameter, ending below in a cavern in the chalk. The shafts were originally descended by means of foot-holes in the sides. The chambers in the oldest, simplest, and shallowest are usually mere expansions of a beehive shape; in the deeper pits the cavern may consist of a series of chambers, symmetrically ranged around the shaft, or the walls of the chambers may have disappeared, and the roof be supported by pillars of chalk. Of three recently descended by the Essex Field Club at Hangman's Wood, near Gray's Essex, Eng., the greatest length was about 70 ft., breadth 46 ft., and height 18 ft., and they were all about 80 ft. deep. Deneholes may be entirely in the chalk, or their shafts may be almost wholly in overlying beds. In England they abound most in Kent, n. of the North Downs, and in Essex, between Purfleet and East Tilbury. A very few of the older and simpler pits have been explored; they are found to date back to the stone ages. The deeper ones still need examination. They were probably

storehouses and places of occasional refuge. On the ordnance maps the word is spelled *daneholes*, suggesting a closer connection with the Danes than seems to have been the case.

DE NEUVILLE, *deh nĕh-vēl'*, Alphonse Marie: 1836, May 31—1885, May 19; b. Saint Omer, France: painter. His father desired him to enter the naval service, but his heart was set on painting, and he was allowed to study with Picot. He was greatly encouraged by Delacroix, exhibited his first work and received a 3d class medal 1859, took the 2d class at the Salon 1861, served in the Franco-Prussian war, received the decoration of the Legion of Honor 1873, was on the Salon exhibition committee 1881, and became a member of the French Water-color Soc. 1883. He furnished a great number of designs on wood for Guizot's *History of France* and various illustrated publications; but was most noted for his great military and battle paintings.

DENGUE, *dĕng'gā*, dandy fever, breakbone fever: an acute infectious disease, epidemic or endemic in character, marked by fever, a slight eruption, and very severe pains in the joints and muscles. It occurs chiefly in the tropics, but epidemics during the warm season in the subtropics are not uncommon. The disease begins suddenly with pain in the head and in one of more joints, backache, a feeling of tension and irritation in the eyes, and high fever. The appetite is lost, nausea is present, and the patient suffers from vertigo and a feeling of extreme prostration. These symptoms last two or three days and then subside, the patient feeling quite well though weak. After an interval of from two to three days of comparative ease the pain and the fever come back, and an eruption appears on the skin, usually first on the palms of the hands. This eruption lasts for a day or two and is followed by a slight desquamation. The pains now subside, usually quite promptly, but occasionally linger in some of the joints for a week or ten days. This disease is seldom or never fatal nor does it have any serious after effects. Although it is not known how dengue is spread, it is believed by many observers that the germ of the disease is carried by mosquitoes, as are those of malaria and yellow fever. Whereas mosquitoes of the Anopheles spread malaria, and those of the Stegomyia genus, yellow fever it is thought that the genus Culex is instrumental in the propagation of dengue.

Aside from the discomfort it causes, the most serious aspect of dengue is that a beginning epidemic is liable to be mistaken for yellow fever, and vice versa. It is less serious to mistake dengue for yellow fever, than to mistake the latter for dengue. If a case is supposed to be one of yellow fever, the patient is *screened* from the approach of mosquitoes. This can only be of service in dengue, especially if the theory that it is spread by mosquitoes proves to be correct. The other mistake is more serious, for if the first few cases of yellow fever are diagnosed and

treated as dengue before their real nature is discovered, many mosquitoes will have become the hosts of the yellow fever germs, and so a small epidemic will be started before the diagnosis of yellow fever is made. It is well therefore to treat every case of dengue, as one would yellow fever, by at once screening the doors and windows of the sick-room and enclosing the bed in a mosquito bar. The burning of some pyrethrum powder in the room, the windows being temporarily closed, will stupefy all the mosquitoes at that time in the room and then they can be killed before coming out of their stupor. The room will thenceforth be mosquito-free, or if some accidentally find their way in they will be unable to approach the patient and so suck any of his germ-laden blood.

The treatment of the disease itself is at present limited to the alleviation of the distressing symptoms. The pains, if very severe, may be relieved—at least made less acute by anodynes, such as phenacetin, or in extreme cases by opium. For the distressing headache anodynes may be necessary, if mustard foot-baths and an ice-bag to the head fail to afford relief. During convalescence the usual tonic and supporting treatment will be called for.

DENHAM, *dĕn'ăm*, Dixon: English explorer: b. London, 1786; d. Sierra Leone 1828, June 9. In 1823–4 he was engaged, in company with Capt. Clapperton and Dr. Oudney, in exploring the central regions of Africa. His courage, address, firmness, perseverance, and moderation, his bold, frank, energetic disposition, and his conciliating manners, peculiarly fitted him for such an undertaking. The account of the expedition was prepared by Denham, and published under the title *Narrative of Travels and Discoveries in Northern and Central Africa* (1826). In 1826 he went to Sierra Leone as superintendent of the liberated Africans, and in 1828 was appointed lieutenant-governor of the colony.

DENHAM, Sir John: English poet: 1615–68; b. Dublin: son of the chief baron of exchequer in Ireland. In 1631, he entered Trinity College, Cambridge, where, after three years, he took his degree. Turning his attention to literaature, he wrote a tragedy, *Sophy*, which in 1641 was acted with great applause at Blackfriars. Two years later he produced the poem *Cooper's Hill*, his most memorable work. In 1647, he was engaged in secret services for Charles I.; but these being discovered, he was obliged to escape to France 1648, returning to England 1652. After the Restoration, he was appointed surveyor-gen. of his majesty's buildings and created knight of the Bath. Toward the close of his life, the latter part of which was darkened by an unfortunate marriage, he was insane; but recovering for a short time, he commemorated the death of Cowley in one of his happiest poetical performances. His verse is characterized by considerable smoothness and ingenuity of rhythm, with here and there a passage of some force.

DEN'HART, or DENHARDT, Clemens and Gustave: German explorers: b. Zeitz 1852 and 1856, respectively. They made a tour in 1878, through the Tana River region, East Africa, to establish German trade, and another from the Island of Lamu to Vitu in March 1885, the sultan of the Swahile desiring a treaty with Germany. Clemens Denhart transferred part of the territory acquired by him to the German Colonist Society, the Deutsche Witugesellschaft. All rights to this territory were ceded by Germany to England in 1890, in exchange for the island of Helgoland, the brothers receiving an indemnity of 150,000 marks from the German government.

DENIAL, n. *dĕ-nī'ăl* [see Deny]: a refusal; a saying *no*. Deni'able, a. *-ă-bl*, that may be refused. Deni'ably, ad. *-blĭ*. Deni'er, n. one who.

DENIER, n. *dē-nēr'* or *dĕn'ĭ-ā* [F.—from L. *denārĭŭs*, a copper coin]: a French farthing, equivalent to half an English farthing; a small coin 1-12th of OF. *sou*.

DENINA, *dā-nē'nâ*, Carlo Giovanni Maria: 1731, Feb. 28—1813, Dec. 5; b. Revello, Piedmont: author. He studied at Turin, and in 1754 was appointed humanity prof. at Pignerolo, but lost his office through writing a comedy that excited the animosity of the priests. Denina went to Milan, but was soon recalled to Piedmont, and appointed prof. of rhetoric in the Univ. of Turin. In 1777, he published anonymously at Florence his *Discorso sull' Impiego delle Persone*, in which he sought to show how monks might be transformed into useful members of society. This, of course, again cost him his chair, and he was even banished from the metropolis. In 1782, he went to Berlin, on the invitation of Frederick the Great. Here he lived many years, and wrote a number of works. In 1804, he was introduced to Napoleon at Mentz, to whom he dedicated his *Clef des Langues* (Ber. 1804), and was in consequence appointed imperial librarian at Paris, where he died. Denina's principal productions are—*Discorso sopra le Vicende della Letteratura* (2 vols. Turin, 1761), *Delle Rivoluzioni d'Italia* (3 vols. Turin 1769–70), an excellent work, copiously abused by the apologists of eccesiastical privileges; and *Storia Politica e Letteraria della Grecia Libera* (4 vols. Turin, 1781–2). Denina's other works were, for the most part, written in Prussia. Among them were—*Essai sur la Vie et le Regne de Frédéric II.* (Berlin 1788), *La Prusse Littéraire sous le Regne de Frédéric II.* (3 vols. Berlin 1790–1), *Tableau Historique, Statistique et Moral de la Haute Italie et des Alpes qui l' entourent* (Turin 1805), and *Storia dell' Italia Occidentale* (6 vols. Turin 1809–10).

DENI'O, Hiram: American jurist: b. Rome, N. Y., 1799, May 21; d. Utica 1834, Nov. 5. He studied law, was admitted to the bar, and practised at Rome and Utica. He was appointed circuit judge of the Fifth New York circuit, and was three times elected judge of the State court of appeals, the first time in 1853. He retired

from that office in 1866. He edited with William Tracy *Revised Statutes* of New York (1852), and published *Reports of Cases Argued and Determined in the Supreme Court and in the Court for the Correction of Errors* (5 vols. 1845–8).

DENIS, St., *săng dė-nē'*: town of France, dept. of Seine, six m. n. of Paris. It is traversed by two small streams, the Croud and Rouillon, and is well built, with clean, spacious streets. It is within the line of forts forming the outworks of the fortifications of Paris, and was itself formerly fortified, but its ramparts have been converted into promenades. St. Denis has manufactures of printed calicoes and other cotton goods; also several flour mills, dye works, bleacheries, and chemical works. Its yearly market, at which there is an annual sale of about 180,000 sheep, is one of the oldest in France, and lasts for a fortnight. The town is supposed by some to date from the foundation of a chapel raised above the tomb of St. Denis (q.v.). This chapel was replaced, some time after his death, by a church and abbey, built by Dagobert I., who was buried in the abbey church, which thereafter became the mausoleum of the kings of France. By a decree of the national convention 1793, the abbey was ordered to be destroyed, and in three days 51 tombs were sacrilegiously rifled and demolished, and the bodies cast indiscriminately into ditches prepared for them. The ancient treasures of precious things were brought in carts into the convention, and have never since been traced. The building, stripped of its lead to furnish bullets for the revolutionists, remained roofless, and was used as a cattle-market, until the time of the Empire, when Napoleon commenced its restoration, which was completed by succeeding governments, in a style surpassing even its former splendor. The crypt of the abbey church contains statues of the French kings and princes from Clovis to Louis XVI. Pop. (1901) 60,808.

DENIS, *dė-nē'*, Saint: according to tradition, the apostle of France and first bp. of Paris, suffered martyrdom in the 3d c. He was sent (as is said) from Rome about 250 to preach the gospel to the Gauls. After various detentions at Arles and other places, he arrived in Paris, where he made numerous proselytes. Pescennius or Siciñnius Lescennius, then Roman gov. of this part of Gaul, ordered Denis to be brought before him, with other two Christians, Rusticus a priest, and Eleutheros a deacon. As they continued firm in their faith, in spite of threats, Pescennius caused them to be cruelly tortured, and afterward beheaded, 272, or, as others say, 290. Gregory of Tours, Fortunatus, and the Latin martyrologists, state that the bodies of the three martyrs were thrown into the Seine, but taken up by a pious woman named Catulla, and interred near where they lost their lives. At a later period, a chapel was built over their tomb. In 636, King Dagobert founded on the spot an abbey, called St. Denis, which soon grew to be one of the richest and most important in

the kingdom, and was long the sepulchre of the French kings. What measure of truth there may be in the above biography, is is impossible to say. The Acts of St. Denis, written about the end of the 7th or beginning of the 8th c., founded upon vulgar traditions is full of absurdities. The Greek Church makes St. Denis to be the same person as Dionysius, the Areopagite, first bp. of Athens. The Rom. Cath. Church celebrates his memory Oct. 9. For a long period his name was the war-cry of the French soldiers, who charged or rallied to the *Montjoye St. Denis.*

DENISON, *dĕn'ĭ-son:* city of Grayson co., Tex., 4 m. s. of Red River, 9 m. n. of Sherman; railroads, the Houston and Texas Central, and Missouri Kansas and Texas. Denison was incorporated 1872. The city has several churches, St. Xavier's convent, flouring and cottonseed oil mills, cotton-gins, manufactories of ice, artificial stone, carriages and brooms, and gas and water-works. The repair shops of the Mo. Kans. and Tex. are located here. Pop. (1900) 11,807; (1910) 13,632.

DEN'ISON, Andrew Woods: military officer: 1831, Dec. 15—1877, Feb. 24; b. Baltimore. He was made col. of the 8th Md. regt. of the national army, and served through the civil war. He was twice wounded, and was brevetted brig.gen. for gallantry at the battle of Laurel Hill 1864, Aug. 9, and maj-gen. for his conduct at White Oak Ridge 1865, Mar. 31. He was postmaster of Baltimore, 1869, Apr. 19, till his death.

DENISON, Charles Wheeler: American poet and prose writer: b. New London, Conn., 1809, Nov. 11; d. 1881, Nov. 14. He published: *The American Village and Other Poems* (1845); *Out at Sea,* poems (1867); *The Child Hunters* (1867); and a series of biographies: *The Tanner Boy* (Grant); *Winfield the Lawyer's Son* (Hancock); etc.

DEN'ISON, Daniel: military officer: 1613-1682, Sep. 20; b. England. He emigrated to America and settled in Mass. 1631; and during the French and Indian war was frequently engaged and rose to be maj.gen. He was a member of the general court, speaker of the house, sec. of the Colony 1653, and commander-in-chief of the Mass. forces 1675. He published *Irenicon, or Salve for New England's Sore* (1684).

DENISON, Frederic: American clergyman: b. Stonington, Conn., 1819, Sep. 28; d. Providence, R. I., 1901, Aug. 16. He was graduated from Brown in 1847; was chaplain in the Union army during the Civil War, and held several pastorates. He has written: *The Supper Institution; The Sabbath Institution; Notes of the Baptists and Their Principles in Norwich, Conn.; Westerly and Its Witnesses; History of the First Rhode Island Cavalry; Picturesque Rhode Island.*

DENISON, George Taylor: Canadian soldier: b. Toronto, 1839, Aug. 31. He was educated at Upper Canada College and Trinity University and was called to the bar in 1861 and elected to the city council 1865-7;

He commenced his military service in 1855 and was made lieutenant-colonel in 1866; served in the Fenian Raids 1866 and North-West Rebellion 1885. He won the Emperor of Russia's prize in 1877 for the best history of Cavalry. His principal works are: *The National Defences: Or Observations on the Best Defensive Force for Canada* (1861); *Canada: Is She Prepared for War?* (1861); *A Review of the Militia Policy of the Present Administration* (1863); *Manual of Outpost Duties* (1866); *The Fenian Raid on Fort Erie* (1866); *Modern Cavalry* (1868); *History of Cavalry* (1877); *Soldiers in Canada* (1900). He was one of the founders of the 'Canada First' party, and through his contributions to periodical literature and public addresses has been known as an earnest advocate of Canada's rights and of the preservation of the unity of the empire.

DEN'ISON, John Evelyn, D.C.L.: for many years speaker of the house of commons and privy councilor: 1800-73; sat in parliament 1823-37 and 1841-57; then was elected speaker of the house of commons without opposition, and unanimously re-elected 1859, 66, and 68. In 1872, he retired from the speaker's chair, and was shortly afterward created Viscount Ossington. He was a D.C.L. of Oxford.

DENISON, John Henry, American Congregational clergyman; b. Boston, Mass., 1841, Mar. 3. He was college pastor at Williamstown for five years, and is the author of *Christ's Idea of the Supernatural* (1895).

DENISON, John Ledyard, American writer: b. Stonington, Conn., 1826, Sep. 19. He has published: *Pictorial History of the Wars of the United States* (1859); *Illustrated History of the New World* (1872); *Pictorial History of the Navy of the United States* (1860).

DENISON, Mary Andrews, American author: b. Cambridge, Mass., 1826, May 26. She married Charles Wheeler Denison (q.v.) in 1846 and became connected with the 'Olive Branch' of which he was on the editorial staff. Contributing frequently to the American and later to the English magazines, she wrote sketches of native life while living in British Guiana, where her husband was American consul. Among her numerous works are: *Home Pictures* (1853); *Gracie Amber* (1857); *Old Hepsey, a Tale of the South* (1858); *Opposite the Jail* (1858); *The Lover's Trials* (1865); *Annie and Teely* (1869); *That Husband of Mine* (1874), which sold more than 200,000 copies in a short time; *That Wife of Mine* (1877); *Rothmell* (1879); *Mr. Peter Crewelt* (1878); *His Triumph* (1883); *What One Boy Can Do* (1885); *How She Helped Him* (1889); *Charles Montgomery* (1893); *Idaline, Captain Molly* (1897); *Noble by Birth* (1899); *The Yellow Violin* (1902); *Her Secret* (1905).

DEN'ISON UNIVERSITY: Bapt. institution at Granville, O.; originated 1831 as a manual labor school, but in 1832 was incorporated as the Granville Literary and

Theological Institute, its name being changed to Granville College in 1845, and to Denison University 1856, and a new building erected, the result of considerable gifts on the part of William S. Denison. There are six buildings, including science, academy, and library buildings. Five courses of 4 years each are provided, besides the preparatory department known as Granville Academy. Its aggregate endowment has since risen to $700,000, and annual income to about $30,000. It has a library of 30,000 vols.; its faculty number 35; and the number of students about 500.

DENIZEN, n. *dĕn′ĭ-zĕn* [in olden times, one who received the privileges of a native by the king's charter, *ex donātĭōnĕ rēgis:* OF. *donaison,* a gift: OE. *deinzein,* a trader within, as opposed to *foreign,* a trader without, the privileges of the city: W. *dinasdyn,* a townsman—from *dinas,* a town; *dyn,* a man]: a citizen; one not a native, but made a citizen; a dweller; an inhabitant: V. to admit to residence and certain rights. DEN′IZENING, imp. DEN′IZENED, pp. *-zĕnd.* DEN′IZA′TION, n. *-zā′shŭn,* the act of making one a denizen. DEN′IZENSHIP, n. state of being a denizen.

DEN′IZEN, in English law, an alien who by letters patent has been constituted a British subject permanently or for a time. A denizen is in a middle state between an alien and a natural born or naturalized subject. He may take lands by purchase, or derive a title by descent through his parents or any ancestor, though they be aliens. No denizen can sit in Parliament, or take office, civil or military.—In natural history, an animal or plant originally introduced into a country or district by human agency, which now maintains itself there without the direct aid of man, is called a denizen of that country or district.

DENIZLI, *dĕn-ĭz-lē′:* town of Anatolia, Asiatic Turkey, on a low hill rising out of a spacious plain; lat. 37° 48′ n., long. 29° 3′ e. Denizli is occupied chiefly with bazaars and market-places, the inhabitants residing mostly in the environs. The manufacture of leather and a kind of morocco forms the staple industry of the place. Pop. 8,000 or 10,000; it was formerly much more numerous, but by an earthquake 1715, no less than 12,000 people perished.

DENMAN, *dĕn′man,* THOMAS, Baron: 1779, July 23—1854, Sep. 26; b. London; chief justice of England. He was educated privately and at Eton and St. John's College Cambridge; took his degree 1800, was called to the bar 1806, and in a few years attained a rank inferior only to that of Brougham and Scarlett. His eloquent speech in defense of Queen Caroline brought on him the hatred of the king and retarded his promotion. In 1818, he was elected member of parliament as a whig and sat there till 1832, when he was elevated to the bench; 1830, was appointed atty. gen.; 1832, lord chief justice of the king's bench; 1834, raised to the peerage; and 1850, resigned the office of chief justice and retired from his profession.

DENMARK (*Danmark*): smallest of the three Scandinavian kingdoms; between 54° and 57° 44′ 52″ n. lat. and 8° 5′ and 12° 45′ e. long., excepting the small island of Bornholm in the Baltic, about 90 m. e. of Sjælland (Seeland), in 15° e. long. Its cap. is Kjobenhavn (Copenhagen). D. is bounded on the n. by the Skagerak, a gulf of the North Sea; on the e. by the Kattegat, the Oresund, and the Baltic; on the s. by the states of the German empire; and on the w. by the North Sea, which the Danes call the 'Vesterhavet.'

The following table gives the area and population of Denmark, according to the census of 1901, Feb.:

Divisions.	Area in Eng. sq. m.	Population.	Pop. per sq. m.
City of Kjobenhavn (Copenhagen)	21	378,235	17,909
Islands in the Baltic	5,062	1,007,513	199
Peninsula of Jylland (Jutland)	9,765	1,063,792	109
Feröerne	512	15,230	30
Total of D. proper	15,360	2,464,770	160
Island (Iceland)	39,756	78,470	1.97
Gronland (Greenland)	46,740	11,895	0.27
West Indies	138	30,527	221
Total of dependencies.	86,634	120,892	1.39
Grand total	101,994	2,585,662	25.3

Kjobenhavn (Copenhagen), the cap., had (1901) 378,235 inhabitants. In 1901, there were five towns in Denmark, besides the capital, in which the population exceeded 20,000.

	Population.
Aarhus, in Jylland	51,814
Odense, chief town of Fyen (Funen)	40,138
Aalborg, in Jylland	31,457
Horsens, in Jylland	22,243
Randers, in Jylland	20,057

Between 1890 and 1901 the urban population increased 29.7 per cent., while the rural population increased but 4.3 per cent.

The continental portion of D., has, since the treaty of Vienna, 1864, Oct. 30, been almost wholly limited to Jylland. The entire coast-line of D., along the North Sea, Skagerak, Kattegat, Oresund, Baltic, and Lillebelt, exceeds 800 m.; but many parts of the coast are entirely unavailable for maritime intercourse, in consequence of the shallowness of the water, or of the numberless sandbanks, bars, and small islands which skirt the coasts. Sjælland, largest of the islands, and seat of the metropolis, Kjobenhavn, has about 2,000 sq. m. Its surface is in general very flat, only a few ft. above the level of the sea, and the highest of its few isolated elevations is not 500 ft. above the sea. The island is generally fertile and well-wooded, especially in the south. Fyen, the island next in extent, area about 900 sq. m., is divided from Sjælland by the Storebelt, and from Jylland by the Lillebelt. It is less wooded than Sjælland, and is intersected by a range of hills of inconsiderable height. The smaller

islands of Lolland, Langeland, Falster, and Moen, 2,000 sq. m., are grouped to the s. of Fyen and Sjælland and have the same physical and geographical characters. They evidently, at some earlier epoch of the world's history, formed, together with those two larger islands, one connected whole, with Jylland on the w. and Sweden on the e. The n.e. shores of Sjælland are separated from the latter country by a channel 70 m. in length, and only 1½ m. in breadth at its narrowest point, known as the Oresund (Ear Sound). This channel varies from 10 to 19 fathoms in depth. The w. coasts of Sjælland are divided from Fyen by the Storebelt, a channel of 9 m. wide at its narrowest point, and from 5 to 16 fathoms in depth—while the w. shores of Fyen are separated from the peninsula of Slesvig and Jylland by the Lillebelt, about four-fifths of a m. wide. The peninsula of Jylland, about 9,600 sq. m., was anciently, and even comparatively recently, covered with forests; but since their wasteful destruction, extensive tracts have become converted into sandy heaths, and in some parts it has been found necessary to sow bent-grass and plant trees to prevent the mischief accruing to the cultivated lands by the clouds of dust raised by the wind. Large tracts of Jylland have been rendered unfruitful by these causes, but where the few forests remain, the neighboring districts are productive and well cultivated. Efforts have been made within the last few years to plant the heaths and drain the marshes of Jylland, and the results have on the whole been very successful.

The coasts of D., both on the continent and on the islands, are indented with numerous bays or Fjorde, the largest of which is Limfjorden, which intersects Jylland, and since 1825 has insulated its n. extremity by breaking through the narrow isthmus which had separated it from the North Sea. It covers 250 sq. miles. D. abounds in small lakes, the most considerable of which are Arre, Esrom, Fure, Gurre, Farum, Skanderborgso, Silkeborgso, and Bavelse. But as no island point is more than 30 or 40 m. from the sea, and the ranges of hills are low and interrupted, the country has no rivers properly so called. Intercommunication is, moreover, facilitated in the islands and in Jylland by various canals.

Climate, Soil, Production, etc.—The climate of D. is modified by vicinity to the sea, and is considerably milder, and the air more humid, than in the more southern and continental Germany. The cold is seldom intense before Christmas, or after the middle of March. The summers are occasionally very hot; the weather generally may be characterized as very variable; rain and fogs are frequent. The mean temperature in Kjobenhavn, whose climate may be regarded as representing an average of that of all D., is, in winter, 32.9°; spring, 43.5°; summer, 63.5°; autumn, 49.3° Fahrenheit. The alternations from winter to summer are rapid, and scarcely broken by the intervention of spring or the succession of autumn. Westerly

winds prevail in the proportion of 48 per cent. to all others. Average rainfall is 21 inches. The total absence of mountains and large rivers, and the alluvial character of the soil, by precluding all mining operations, of necessity lead the peasantry to follow agriculture, in the pursuit of which more than half the population are engaged. The drought of the spring and the short and sudden heat of the summer are often detrimental to the grass; but there is seldom an absolute failure in the supplies, and the cereal crops are generally good. Fully 80 per cent. of the total area is productive. An interesting feature of agricultural operations is the large number of small farm holdings, the law preventing the merging of small properties into large estates, encouraging the sub-division of landed property, and protecting the tenant in the control of his leasehold so long as he pays the rent. The West Indian Islands, St. Croix, St. Thomas, and St. John, are chiefly populated by free negroes engaged in sugar-cane growing, and their trade with D. proper has been decreasing rapidly for several years, to the gain of Great Britain, which exports thither cotton goods, coal, and iron.

The Danish fisheries are not so important as might be expected from the extended coast-line. The principal fish in D. are herrings, whitings, cod, flounders, mackerel, salmon, and eels. Oyster beds, which are included under the royalties of the Danish crown, are at Frederikshavn, Skagen and in the Limfjord. No part of the Danish territories is rich in minerals; some coal is found in the island of Bornholm. Amber is collected on the w. shores of Jylland. Peat is got wherever there are swamps; and from the absence of productive coal-mines, and the increasing scarcity of wood, it is of great value for fuel, and every village in the vicinity of such land has a certain portion assigned for its supply. Beech and birch are the prevalent trees, but oak, pine, and larch are also indigenous, and grow to perfection. There is a large and growing foreign demand for the agricultural produce of D.; cattle raising is becoming widely established; and dairy farming has reached such a point of development and perfection that the export of butter and other dairy produce has become the main source of the wealth of the kingdom. The condition of the laboring classes is happy; they are more roomily and warmly lodged, and better clad, than in Great Britain, and their dwellings are as a rule very clean. Many of the peasants continue to manufacture much of what they require within their own homes, the women weaving linen and woolen stuffs for the use of the household, and the men making some of their own furniture and simplest farm implements, and the wooden shoes which are worn by men, women, and children. The Danes have not to any great extent availed themselves of the natural advantages of the country for manufactures and trade; and notwithstanding the rich porcelain clays in Bornholm, and the abundant water-power in many parts of the kingdom, the industrial operations are incon-

siderable. There are, however, some good porcelain and glass works, iron foundries, and other factories in different parts of the country; and of late years the manufacture of ornamental paper has been brought to great excellence in Kjobenhavn, and at Silkeborg, in Jylland. Linen is the principal article of domestic manufacture, but the supply does not suffice for the home demand.

Commerce.—In 1901 the merchant marine of D. and colonies comprised 3,733 vessels, with a total registered tonnage of 408,440 tons. During 1900 more than 33,000 vessels (excluding coasting vessels) entered Danish ports. In 1900 the exports of D. amounted to nearly $105,500,000 and the imports to over $141,000,000. In 1904 the exports from the U. S. to D. amounted to $32,644,345, and the imports into the U. S. from D. $74,950,992.

Manufactures.—The manufacturing industries of the country are increasing but are still very small. The principal manufactures are textile fabrics, furniture, foodstuffs, apparel, and metal products.

Finances.—In the year ending 1903, Mar. 31, the actual revenue was equal to $20,306,000, and the actual expenditure $20,792,000. More than half of the revenue is from indirect taxes, chiefly customs and excise; and the largest expenditures are, in their order, for the ministry of war, improvement of state property and reduction of debt, ministry of marine, interest and expenses on the public debt, and the ministry of the interior. The national debt (1903) was $66,033,849. D. has over 80 National Banks and more than 500 savings banks, with over 1,000,000 accounts, and more than $77,000,000 deposits.

Railroads and Telegraphs.—In 1901 D. had a total of 1,810 m. of railroad, of which the state owned 1,108 m. and the total cost of which (1901) was $66,300,000. In 1900 D. had 2,413 m. of telegraph lines

Army, Navy, etc.—According to law, all able-bodied adult Danes are liable to serve 8 years in the regular army, and a similar period in the army of reserve. The kingdom is divided into an eastern and a western command, with 2 brigades in the former and 3 in the latter, each brigade having 2 battalions and furnishing the contingent of a brigade of infantry and a regiment of cavalry. In 1907 the active army consisted of 8,600 infantry, 1,800 cavalry, 2,330 artillery, 750 engineers, etc., making a total active army of 13,480 men. The total war strength is 92,680. The navy is recruited by levies in the coast districts and is maintained solely for coast defense. The fleet (1907) comprised 10 second and third class battleships, 4 protected cruisers, 8 seagoing gunboats, 1 torpedo boat destroyer, 30 torpedo boats, with 361 officers and 6,426 men. Besides Kjobenhavn the only fortresses are the coast defenses at Helsingor, Fredericia, Korsör, Frederikshavn, and Hals.

Education.—The educational institutions of D. have reached a high degree, and a few countries, if any, can

compete with her in excellence of system, and its extensive application relatively to the amount of the population. Education is compulsory for children between the ages of 7 and 14 years, and communal schools are free to children whose parents cannot afford to pay. In 1907 there were about 3,000 elementary schools, with 250,000 pupils. For higher instruction there were a veterinary and agricultural college, agricultural and horticultural schools, over 100 high and Latin schools, a college of pharmacy (founded 1892), a royal academy of arts, and over 100 technical and commercial schools. The University of Kjobenhavn has 40 professors and about 1,500 students.

Religion.—The established religion of D. is Lutheran, to which the king must belong; but complete toleration is enjoyed in every part of the kingdom. The Reformation was introduced 1536, when Christian III. caused all the Roman Cath. bishops to be deposed in one day. D. is divided into 7 dioceses, or Stifter (besides those in the West Indian colonies and Reykjavik in Island—viz., the metropolitan see of Roskilde (the ancient capital) in Sjælland, Lolland, Fyen, Ribe, Aarhus, Viborg, Aalborg; abt. 2,000 parishes, with numerous affiliated churches. The nomination of the bishops is vested in the king; they have no political character. In 1907 the religious statistics were as follows: Protestants, 2,089,000; Catholics, 3,000; Jews, 4,000; unclassified, 4,000. There were 990 Sunday Schools, with 4,610 teachers and 72,800 scholars.

Judiciary.—The supreme court, or court of final appeal, with a chief-justice, 12 puisne judges, and 11 special judges, sits in Kjobenhavn; the superior court, or court of second instance, sitting in Viborg and Kjobenhavn, has 9 judges in the former and 17 in the latter; and the lowest courts are those of the district magistrates and of town judges, from which appeals go to the superior court and thence to the supreme. Kjobenhavn has a superior court, identical with that of civic magistrates. Judges under 65 years of age can be removed only by judicial sentence.

Constitution and Government.—The succession to the crown was not necessarily hereditary till 1660, when the people and the clergy, impelled by hatred toward the nobles, in whose hands the supreme power of the state rested *de facto*, constituted themselves into a national assembly, which invested the sovereign (Frederick III.) for himself and his heirs with absolute power, and declared the succession to the throne hereditary. From that time, the crown exercised the *dominium absolutum*, unchecked by any constitutional restraint, till 1831, when Frederick VI., yielding to the pressure of the times, granted a constitution to his people, and established an assembly of notables for the islands and Jylland, the duchies being governed by their own constitutional forms. The nation was at first perfectly satisfied with the amount of power conceded by the king, but after a time the anomalous character of the authority vested in the assembly created

great political agitation and discontent. This feeling continued to increase under the reign of Frederick's successor, Christian VIII.; and on the death of the latter, his son and successor, Frederick VII., saw himself obliged to depart from the conservative policy of his father, and to grant, 1849, the constitutional form of government which D. now possesses and which is based on most liberal principles. The national assembly or Rigsdag consists of the Folkething and Landsthing, and is invested with extensive powers; it meets annually for two months, and its members receive a fixed allowance during their sittings. The Landsthing is composed of 66 members, of whom 12 are chosen for life by the king, while the remainder are elected for a term of 8 years by certain municipal and rural electoral bodies, who represent the large taxpayers of the kingdom. A fixed age, good reputation, and a certain moderate independent income are the only qualifications required for election to this branch of the Rigsdag. The members of the Folkething, whose number (now 102) varies with the population, are elected for three years by universal suffrage, and, except that no fixed income is required in their case they must have the same qualifications as candidates for the upper chamber. The Rigsdag must meet every year, and must, in the course of their session, consider and dispose of the annual accounts that the finance minister is bound to submit to their scrutiny.

The king's person is inviolable; the ministry is responsible, and with the king as president, constitutes the executive royal privy council. The members of this body, who preside over distinct ministerial departments, are individually and collectively responsible to the Rigsdag for their acts. The king nominates and discharges his ministers. D. is divided for administrative purposes into 18 Amter (counties), each administered by a Amtmand (governor); the counties into Herreder; and the Herreder into Sogne (parishes). Kjobenhavn forms a district by itself, with a special form of administration; and Island (Iceland), which was granted a special constitution and administration in 1874, received a fuller measure of home rule under a new constitution and with legislative privileges in 1893. The titles of nobility in D. are limited to Grever (counts) and Baroner (barons).

History.—The Kymri were the earliest-known inhabitants of Scandinavia, and made themselves formidable to the Romans 100 years before Christ. To them succeeded the Goths, who, under their mythical leader, Odin, established their rule over the Scandinavian lands. Odin's son, Skjold, is reputed to have been the first ruler of D.; but the little that is known of Danish history in those remote ages, seems to indicate that the country was divided into many small territories, whose inhabitants lived by piracy. The people were divided into Bonder (freemen), and Trælle (bondsmen). The former busied themselves

with war, and Vikingetog, or piracy, and the government of the land; while to the latter were left the peaceful pursuits of hunting, fishing, and tilling the soil. When Harald Klak, one of the Danish Smaakonger (little kings) in 826 visited the German emperor at Ingelheim, he and his family were baptized, and when he returned to D. he was accompanied by Ansgarius, a pious monk, who laid the foundation of the Christian Church in D. and the Scandinavian peninsula; he thus became the apostle of the north, and this was one of the means of first opening the Danish territories to the knowledge of more civilized nations. The country was soon torn by civil dissensions between the adherents of the ancient and modern faith. Gorm the Old, the first authentic king of D., the bitter enemy of Christianity, died about 940, after having subjugated the several territories to his sway; and though his death gave fresh vigor to the diffusion of the new faith, paganism kept its ground for nearly 80 years longer. The success that attended the piratical incursions of the Northmen, drew them from their own homes; and while Gorm's descendants, Svend, and Knud, were reigning in England, D. was left a prey to anarchy. On the extinction of Knud's dynasty 1042. The Norwegian king Magnus den Gode became king of D. for a few years, later on the Danish king, Svend Tvesbjeg's daughter's son, Svend Estridsen, ascended the throne. Internal dissensions and external wars weakened the country, and the introduction of a feudal system raised up a powerful nobility, and ground down the once free people to a condition of oppressed serfage. Valdemar I., by the help of his great minister Axel Hvide, known in history as Bishop Absalon, subjugated the Wends of Rügen and Pomerania, and forced them, 1168, to renounce the faith of their god, Svantevit, and accept Christianity. During the time of Knud VI., and in the early part of the reign of Valdemar II.—sons of Valdemar I.—the conquests of D. extended so far into German and Wendic lands, that the Baltic was little more than an inland Danish sea. The jealousy of the German princes and the treachery of his vassals combined to rob Valdemar II. of these brilliant family conquests. His death in 1241 was followed by a century of anarchy and inglorious decadence of the authority of the crown, during which the kingdom was brought to the brink of annihilation under the vicious rule of his sons and grandsons. Under his great-grandson, Valdemar Atterdag IV., the last of the Estridsen line, D. made a quick but transient recovery of the conquest of the older Valdemars, and the national laws were collected into a well-digested comprehensive code. From his death in 1375 till 1412, his daughter, the great Margaret, first as regent for her only and early lost son, Olaf, and later as sole monarch, ruled, not only D., but in course of time also Sweden and Norway, with such consummate tact, and with so light yet firm a hand, that for once in the course

of their history, the three rival Scandinavian kingdoms were content to act in harmony. Margaret's successor, Erik, the son of her niece, for whose sake she had striven to give permanence, by the act known as the Union of Calmar, to the amalgamation of the three sovereignties into one, undid her glorious work with fatal rapidity, and, after an inglorious war of 25 years with his vassals the Count-Dukes of Siesvig-Holstein, he lost the allegiance and the crowns of his triple kingdom, and ended his disastrous existence in misery and obscurity. After the short reign of his nephew, Christopher of Bavaria, the Danes, on the death of the latter in 1448, again exerted their long-used ancient right of election to the throne, and chose for their king Christian of Oldenburg, a descendant of the old royal family (King Erik Glipping) through his maternal ancestress Richiza, great granddaughter of Valdemar II. Christian I., father of the Oldenburg line which continued unbroken till the death of Frederick VII. 1863, laid the foundation of the Slesvig-Holstein troubles, which after maturing for centuries, have ended in our own day in dismembering the Danish monarchy. Christian bought the empty title of Count-duke of Slesvig and Holstein in 1460, by promising for his successors that they should forever leave the two provinces united, a pledge that he had no right to impose, and they no power to keep; and by his failure to pay his daughter's dowry to her husband, James III. of Scotland, he lost for Norway her ancient provinces of the Shetlands and Orkneys, which had been given in pawn to the Scottish king. His unprofitable reign was followed by half a century of international struggles in Scandinavia. The insane tyranny of the otherwise able and enlightened Christian II., by exasperating the Danish nobles, and lashing the national anger of the Swedes to fury, cost him his throne, and gave him a life-long cruel imprisonment among his subjects in D., who chose his uncle Frederick I. to be their king, while Sweden was forever separated from D., and raised under the Vasas (see GUSTAVUS I.) to be a powerful state. Christian III., in whose reign the Reformation was established, united the Slesvig-Holstein duchies in perpetuity to the crown in 1533. His partition of the greater part of these provinces among his brothers became a source of much mischief to D., which did not end till 1773, when the alienated territory was recovered by the cession of Oldenburg and Delmenhorst to the Grand-Duke of Russia, the representative of the Holstein-Gottorp family. Frederick II., who increased the embarrassments connected with the crown-appanages, by making additional partitions in favor of his brother (the founder of the Holstein-Sonderburg family), was succeeded by Christian IV., 1588, ablest of all the Danish rulers. His liberal and wise policy was, however, cramped in every direction by the arrogant nobles, to whose treasonable supineness D. owes the reverses which culminated in the loss of all the possessions hitherto

retained in Sweden. The national disgraces and abasement, which followed, led in 1660, under Christian's son, Frederick III., to the rising of the people against the nobles, and their surrender of the supreme power into the hands of the king. For the next hundred years, the peasantry were kept in serfage, and the middle classes depressed; while the power of the crown rested in the hands of a Germanized nobility, who despised the language and usages of their country, and exerted the most baneful influence on the true national life. Many improvements were, however, effected in the mode of administering the laws, and the Danish kings, though autocrats, exercised a mild rule. The abolition of serfage was begun by Christian VII. 1767, but not completed till 20 years later; it was extended to the duchies 1804. The miseries of the reign of Christian's son, Frederick VI., due to the relations maintained by D. with Napoleon, brought the country to the verge of ruin. At war with Sweden, England, Russia, and Prussia, and with the finances in a depressed condition, the kingdom was threatened with bankruptcy; and though it had speedily rallied from the injuries and losses inflicted by the battle of Kjobenhavn, under Nelson 1801, the fresh rupture with the allies, which ended in the compulsory surrender to the English of the entire fleet, after the destructive bombardment of Kjobenhavn 1807, Sep., completely paralyzed the nation. By the congress of Vienna, D. was compelled to cede Norway to Sweden. The discontent that had long been brooding in the duchies, degenerated after the stirring year of 1830 into mutual animosity between the Danish and German population, which was not allayed by the schemes devised by the court. The anticipated failure of heirs to the throne complicated the questions at issue; and the Holstein party, encouraged by the diet at Frankfort, and perhaps still more by Prussia, came to open rupture with D. 1848, hastened, no doubt, by the reaction produced all over the continent by the French Revolution; and thus, on the accession of Frederick VII., half his subjects were in open rebellion against him. After alternate hostilities and armistices the Slesvig-Holstein war was virtually concluded 1850, by the victory of the Danes over the Slesvig-Holsteiners at Isted. The liberal constitution granted by the king fully satisfied his subjects in D. proper, but disaffection still smouldered in the duchies.

On the death in 1863 of Frederick VII., Prince Christian of Slesvig-Holstein-Glücksborg, ascended the throne under the title of Christian IX., in conformity with the act known as the treaty of London of 1852, by which the succession to the Danish crown had been settled on him, and his descendants by his wife, Princess Louise of Hesse-Cassel, niece of King Christian VIII. of D. Frederick VIII., oldest son of Christian IX., is now king of D. With Frederick VII., the direct Oldenburg line had expired, and at his death, the question of the succession to the duchies

acquired an importance which it had never before possessed. A pretender, backed by German influence and help, at once started up in the person of the eldest son of the Duke of Augustenborg, whose defeat in 1850 and solemn renunciation of all claims on the titles or possessions of the Danish royal house, in consideration of his receiving a free pardon, and accepting a large sum of money from the crown, had been regarded in D. as the final settlement of his pretensions.

The cause of the Augustenborg prince, who assumed the title of Duke Frederick VIII. of Slesvig-Holstein, was speedily merged and lost sight of by Prussia and Austria in their direct aim of incorporating the duchies with the German Confederation. D., unaided by the neighbors and allies on whose support she had relied, was forced to go single-handed into the unequal contest. After a brave but utterly futile attempt at resistance, the Danes found themselves forced to submit to the terms conceded by their powerful foes, and to resign not only Lauenborg and Holstein, but the ancient crown appanage of Slesvig into the hands of the German confederate powers. By the peace of Vienna, 1864, the Danish king bound himself to abide by the decision which Prussia and Austria should adopt in regard to the destiny of the several Danish provinces. The dissensions between these two great powers, which led to the Austro-Prussian war of 1866, and resulted in the triumph of Prussia, have left the fate of the Slesvigers entirely in the hands of the latter state, which has hitherto refused to relinquish its hold upon the province. Since the war, D., though reduced to the narrow limits of the islands and Jylland, has recovered from its fall, and the degree of political and social freedom enjoyed by the nation is now as high as in any country in Europe. A political struggle between the govt. and the Folkething, which had been going on since 1885, was seemingly settled by a compromise in 1894, when both the Folkething and the Landsthing assented to the budget, for the first time since the struggle began, and the ministry of M. Estrup resigned after 19 years' tenure of office. The Conservatives had contended that under the constitution the Folkething did not possess supremacy in matters of taxation and finance, nor the power of practically deciding who should be the ministers, and held that the king and Landsthing together might overrule the Folkething. In 1892 it was agreed that the two branches of the Rigsdag would confirm the provisional laws of the Estrup ministry, which should make way for one of a Moderate type. The agreement was carried out 1894, Aug. 7, and Baron de Reedtz-Thott (Moderate) became premier. The new cabinet gained additional strength the same month by the elections for one-half of the Landsthing; but the election of 1895 was unfavorable to the compromise, as 61 Radicals, 28 Moderates, and only 24 Conservatives were elected.

See Danish Language and Literature.

DENNERY, or D'ENNERY, *dĕn-rē'*, ADOLPHE PHILIPPE: b. Paris, 1811, June 17; d. there 1889, Jan. 26; of Jewish extraction; dramatic writer, having previously been clerk to a notary, then a painter, then still young, a writer for newspapers. He ranks as one of the most prolific of dramatic authors, having produced by himself or in concert with others, about 200 pieces, five of which were seen on the Parisian stage at one time. He was founder of the watering-place Cabourg-Dives. Dennery was decorated with the Legion of Honor 1849, Dec. 10.

DENNEWITZ, *dĕn'nė-vĭts:* small village in the province of Brandenburg, Prussia, 42 m. s.s.w. of Berlin. Here was fought, 1813, Sep. 6, a battle between 70,000 French Saxons, and Poles, commanded by Marshal Ney, and 45,000 Prussians, under General Bülow. The fighting was obstinate, but finally Ney gave the order to retreat. At this moment the appearance of Bernadotte at the head of 70 battalions of Russians and Swedes supported by 10,000 horse and 150 cannon, turned the retreat into a rout. The French lost 15,000 killed, wounded, and prisoners, and 43 cannon. The allies lost 9,000 killed and wounded.

DENNIE, *dĕn'nĭ*, JOSEPH: critic, author, and journalist: 1768, Aug. 30—1812, Jan. 7, b. Boston. After graduating at Harvard 1790, and while studying law at Charlestown, N. H., he contributed to newspapers. He was admitted to the bar, but soon forsook law for journalism, and edited *The Tablet* in Boston 1795. He was the 'Lay Preacher' of *The Farmers' Weekly Museum,* printed by Isaiah Thomas at Walpole, N. H., 1795-98, and his graceful and humorous essays under this title were widely copied. His publisher failed, and Dennie being defeated as candidate for congress, went to Philadelphia as private sec. to Thomas Pickering, sec. of state, where for a time he edited the *United States Gazette.* In 1801, with Asbury Dickens, he established the *Portfolio,* for which he wrote over the pen name 'Oliver Old School.' He died in Philadelphia.

DENNIS, *dĕn'ĭs,* JOHN: 1657-1734; b. London, son of a London saddler. He was put to school at Harrow; afterward, 1675, he went to Caius College, Cambridge. Four years later he removed to Trinity Hall in the same university, and in 1683, took his degree M.A. After leaving Cambridge, he travelled on the continent, passing through France and Italy. Returning home, he joined the Whigs, and brought a rancorous pen to the assistance of his party. He formed the acquaintance of Dryden and Wycherley, and other wits of the time, and made various attempts as a theatrical writer. Dennis was expensive in his habits; and in his later years he had to depend for subsistence on private patronage and on his pen. For some years he had a small annuity, but that he outlived. Dennis had an ungovernable temper, and made many enemies; and his name is one of the best abused in English literature: Swift lampooned him: Pope assailed him in the *Essay on Criticism,* and finally 'damned him to everlasting fame' in the *Dunciad.*

DENNIS, Robert, English journalist: b. Bodmin, Cornwall, 1855, Jan. 5. He was educated at Leipsic, was for a time reporter and assistant editor on the *Mail* and Glasgow *News*, and then, removing to London, served on the staff of various London papers, and has been news editor of the London *Daily Express* from its foundation. He has published: *Industrial Ireland* (1887); *History of the Baronetage* (1887); *The New Politics* (1898); *A Romance of Tottenham* (1899).

DENNISON, *dĕn'nĭ-son*, William: statesman. 1815. Nov. 23—1882, June 15; b. Cincinnati. He graduated at Miami Univ. 1835, studied law, and was admitted to practice in Columbus. He was elected to the state legislature 1848, and became pres. of the Exchange bank of Columbus, and of the Columbus and Xenia railroad. He was a delegate to the first national repub. convention 1856, and was elected gov. of Ohio 1860 as a republican. He was one of the great 'war-governors,' and showed splendid energy and loyalty during the civil war. He was U. S. postmaster-gen. 1864-66. He was a candidate for U. S. senator, and led the friends of John Sherman in the national repub. convention 1880.

DENOMINATE, v. *dĕ-nŏm'ĭ-nāt* [L. *denomĭnātus*, designated—from *de*, *nomĭno*, I name; It. *denominare;* F. *dénommer;* Sp. *denominar*, to denominate]: to give a name to; to designate. Denom'inating, imp. Denom'inated, pp. Denom'inator, n. *-nā-tẽr*, in a *vulgar fraction*, the number placed below the line, denoting the number of parts into which a *unit* or *whole* is supposed to be divided. Denom'ina'tion, n. *-nā'shŭn* [F.—L.]: a name or appellation; a title; a society or class of individuals called by the same name; a sect. Denom'ina'tional, a. *-ĭ-nā'-shŭn-ăl*, pertaining to a number of individuals called by the same name; sectarian. Denom'ina'tionally, ad. *-lĭ*. Denom'ina-tive, a. *-nā-tĭv*, that which gives or confers a name.—Syn. of 'denomination': name; designation; epithet; category; class; collection; sect.

DENON, *dė-nōng'*, Dominique Vivant, baron: 1747, Jan. 4—1825, Apr. 27; b. Châlons-sur-Saone: art critic and etcher. He accompanied Napoleon to Egypt and on many conquering expeditions, selecting for the Louvre the desirable specimens of art. He was skilful in drawing ancient relics.

DENOTE, v. *dĕ-nōt'* [F. *dénoter*—from L. *denotārĕ* to point out—from *de*, *nota*, a mark; It. *denotare*]: to point out by a mark; to indicate; to signify by some visible token. Deno'ting, imp. Deno'ted, pp. Deno'tative, a. *-nō'tă-tĭv*, having power to denote. Deno'table, a. *-tă-bl*, capable of being denoted. Denotation, n. *dē'nō-tā'shŭn* [F.—L.]: the act of denoting; the marking off or separation of anything. Denotement, n. *dĕ-nōt'mĕnt*, in *OE.*, indications; signs.—Syn. of 'denote': to signify; mean; mark; indicate; point out; intend; express; imply.

DENOTATION, in logic:—That which a term or concept denotes; the *extension* or application of a term to the

individual objects or instances concerning which the term *means* or *connotes* common attributes. In a class-concept the term primarily *intends* certain characteristics, and, secondarily, applies to certain individual instances; for instance, 'man' implies the characteristics of a certain physical form, upright carriage, articulate speech, etc.; 'men' is the denotation of the term 'man.' It is a formula of the old formal logic that as the denotation of a term is increased its connotation decreases and *vice versa*. This is not always true in fact. More instances may be discovered to which a term applies without decrease of meaning; 'Railways in China' once referred to one object only, now it refers to several. Indeed, increased meaning may be brought about by increased extension of a term; suppose a new race of pigmies be discovered in Central Africa, then the concept 'man' undergoes at the same time enrichment of meaning and enlargement of application. See CONNOTATION.

DÉNOUEMENT, n. *dĕ-nô'mâng* [F. unravelling—from L. *de*, down; *nōdārĕ*, to tie in a knot—from L. *nōdus*, a knot —*lit*, the untying or unraveling of the knot]: the winding up of an affair; the final scene in a play, or in the plot of a novel; the development. Strictly speaking, dénouement designates the train of circumstances solving the plot, and hastening the catastrophe.

DENOUNCE, v. *dĕ-nowns'* [F. *dénoncer*—from L. *denunciārĕ*, to intimate, to declare—from *de*, *nunciō*, I declare: It. *denunziare*]: to accuse in a threatening manner; to threaten solemnly; to inform against; to stigmatize; to accuse publicly; to give formal notice of the termination of a treaty. DENOUNC'ING, imp. DENOUNCED', pp. *-nownst'*. DENOUNCE'MENT, n. a public accusation; a threatening declaration. DENOUN'CER, n. *-sĕr*, one who.

DE NOVO, phrase, *dē-nō'vō* [L.]: anew; afresh; from the beginning.

DENS, *dĕns* or *dŏng*, PETER: Roman Catholic theologian: 1690-1775, Feb. 15; b. Boom, a small Belgian town, on the river Rupel, about 10 m. s. of Antwerp. Apparently nothing is known—at least by Protestant writers—regarding the incidents of his life, as his name appears in none of the encyclopædias or current biographical works of reference, unless in some quite recent. The scanty information which we possess is derived from the epitaph on his tomb in the chapel of the archiepiscopal college of Malines, from the hand of a recent rector. From this it appears that he was reader in theology at Malines (something equivalent to prof. of divinity) for 12 years, *plebanus* or parish priest of St. Rumold's or Rumbolds Church in the same city, and president of the College of Malines for 40 years. He also held various honorary church offices. He was canon and penitentiary synodical examiner, and scholastic archpriest of St. Rumold's—the metropolitan church of Belgium. The work which has rendered Dens' name familiar, even to the Protestant

public, is his *Theologia Moralis et Dogmatica*. It is a systematic exposition and defense—in the form of a catechism—of every point of ethics and doctrine maintained in the Roman Church, and is extensively, if not generally, adopted as the text book of theology in Rom. Cath. colleges, being a convenient and usable compilation. Its casuistical parts have been severely criticised by Protestant moralists. An edition was published at Dublin 1832.

DENSE, a. *dĕns* [F. *dense*—from L. *densus*, thick: Ir. *dense*], close; compact; thick, as a fog; approaching to a solid. DENSE'LY, ad. *-li*. DENSE'NESS, n., or DENSITY, n. *den si-ty*, closeness of parts; thickness.

DENSIMETER, n. *dĕn-sĭm ĕ-tĕr* [L. *densus*, thick; Gr. *metron*, a measure]; instrument contrived by Col. Mallet, of the French army, and M. Bianchi, for ascertaining the specific gravity of gunpowder.

DENSITY, in physics, a term denoting the quantity of matter per unit of volume in a body. The mass, or quantity of matter, is measured by the weight, and thus density and specific gravity come to be proportioned to one another; and a comparison of the weights of equal bodies results in a comparison of their densities. In order to test the densities of various bodies conveniently, a standard substance is fixed on, and the densities of other substances are reckoned by comparison with this. For all liquids and solids, water at a fixed temperature is taken as the standard; and for all gases the standard is common air at a fixed temperature and barometric pressure. There is however some variation in the temperature fixed on, in the first case, and in both the temperature and pressure fixed on in the second. Thus in England the standard temperature for water used to be 60° F. and sometimes 62° F. The latter temperature is mentioned in the legal definition of the imperial gallon. Again, in the case of gases the standard temperature was 60° F. or 62° F., and the standard pressure 30 inches of mercury in the latitude of London. The metric system on the other hand, makes use of the temperature 4.1° C. (the temperature of the maximum density of water) as the standard for water, and of the pressure 76 centimeters of mercury in latitude 45° as the standard barometric pressure. For gases the temperature 0° C. (the melting point of ice) is always employed as the standard. The density of bodies is diminished by heat and increased by cold. See HEAT; MATTER.

DENSITY, CURRENT. The number of amperes per unit of cross sectional area of a conductor through which the current travels. Thus, 500 amperes traveling over a wire of $\frac{1}{2}$ sq. inch cross section gives a current density of 1,000 amperes per sq. inch.

DENSITY, MAGNETIC: term used to indicate the strength of a magnetic field per unit of area of the poles from which the magnetic lines emanate. See ELECTRICITY, PRINCIPLES OF.

DEN'SLOW, William Wallace, American illustrator: b. Philadelphia 1856, May 5. He studied art at Cooper Institute and at the National Academy of Design, New York. He has been a prolific illustrator since 1872, at first being a traveling illustrator for the leading American newspapers. Among his works are the pictures: *What's the Use? Victory*, and *The Heathen Chinee*. He is joint author, with Paul West, and illustrator of *The Pearl and The Pumpkin* (1904).

DENT, n. *dĕnt* [only another spelling of *dint*, a blow: F. *dent*, a tooth—from L. *dentem*, a tooth, *lit.*, a mark as with a tooth]: a gap or notch; a small hollow formed in a body or mass: V. to mark as with a tooth; to indent; to make a small hollow. Dent'ing, imp. Dent'ed, pp. *Note.*—It is only through a false etymology that Dent has the present sense of 'a gap or notch' as with a tooth; the word is simply another spelling of *dint*, which see.

DENT, Frederick Tracy: American soldier; b. White Haven, Mo., 1820, Dec. 7; d. Denver, Col., 1892, Dec. 24. He was graduated from the United States Military Academy at West Point in 1843, and served in the Mexican war, being engaged in the siege of Vera Cruz, and the battles of Cherubusco and Molino del Rey. He took part in the Yakima expedition (1856), in the Spokane expedition, and in the Snake River expedition (1860). During the Civil War he commanded a regiment in the Army of the Potomac in 1863; was stationed in New York in September 1863, where riots were feared, and was Grant's aide-de-camp throughout the Richmond campaign. He was secretary to President Grant during his first administration. He retired from active service in 1881, with the rank of brigadier-general in the regular army.

DENT, John Charles: English journalist: b. in England, 1841; d. 1888; came to Canada at an early age. He was called to the Ontario bar and for a time practiced law. After a period of journalistic work in London, England, he migrated to Boston in 1867; returned to Toronto 1870 and assumed an editorial position on *The Globe;* later devoted himself to literature. His chief works were: *The Last Forty Years; or Canada Since the Union of* 1841 (2 vols. 1881); *The Story of the Upper Canadian Rebellion* (2 vols. 1885).

DENTAL, a. *dĕn'tăl* [F. *dent*, a tooth—from L. *dens* or *dentem*, a tooth: Skr. *dantas*, a tooth]: pertaining to the teeth; pronounced by the teeth: N. a letter pronounced chiefly by the teeth, as *d*, *t*. Den'tist, n. *-tĭst* [F. *dentiste*]: one whose profession is to extract, repair, and supply teeth decayed or lost by disease. Den'tistry, n. *-tĭs-trĭ*, the profession of a dentist. Denti'tion, n. *-tĭsh'ŭn* [F.—L.]: the cutting or breeding of teeth; a dental formula. Den'tate, a. *-tāt*, or Den'tated, a. [L. *dentātus*, toothed]: in *bot.*, toothed; having short triangular divisions of the margin. Den'tately, ad. *-lĭ*. Denta'tion, n. a toothed character. Den'ticle, n. *-tĭ-kl* [L. *denticŭlus*, a small

tooth]: a small tooth or projecting point. DEN'TICULE, n. *-kūl*, the flat projecting part of a cornice on which dentils are cut. DENTIC'ULATE, a. *tĭk'ū-lāt*, in *bot.*, finely toothed; having small tooth-like projections along the margin. DENTIC'ULATELY, ad. *-lĭ*. DENTIC'ULA'TION, n. *-lā'shŭn*, the state of being set with small teeth. DEN'TIFRICE, n. *-tĭ-frĭs* [F.—from L. *dentĭfrĭcĭŭm*, tooth-powder—from *dens*, a tooth; *frĭco*, I rub]: a powder used in cleaning the teeth. DENTIG'EROUS, a. *-tĭj'ĕr-ŭs* [L. *gero*, I carry]: bearing, supporting, or supplied with teeth. DEN'TINE, n. *-tīn*, the tissue which forms the body of a tooth; a second application of the term is—the ivory-like part directly beneath the enamel—*R. Owen:* a third is—the enamel itself, which is very hard and durable and consists mainly of phosphate of lime with gelatine. DENTURE, n. *dĕnt'ūr* [F.]: an artificial tooth, block, or set of teeth. DENTILABIAL, a. *dĕn-tĭ-lā'-bĭ-al* [L. *labium*, a lip]: applied to a sound formed by bringing forward the tips of the teeth and laying them upon the lower lip, as in pronouncing *f* or *v*. DEN'TILS, n. plu. *-tĭlz*, in *arch.*, in the Ionic, Corinthian, or Composite orders, square projections in the bed-moldings of Cornices, bearing some resemblance to teeth: see ENTABLATURE. DENTAL FORMULA, a notation used by zoologists to denote the number and kind of teeth of a mammiferous animal.

DENTALIDÆ, n. plu. *dĕn-t-ăl'ĭdē* [L. *dens*, a tooth; suf. *-idæ*]: the tooth-shells, a family of mollusks, consisting of the single genus *Dentalium*.

DENTALIUM, *dĕn-tā'lĭ-ŭm* [Lat. *dens*, a tooth]: genus of marine gasteropodous mollusks, of the ord. *Scaphopoda* (Spade-foot), having two symmetrical *branchiæ*, which are inclosed, with all the other soft parts of the body, in an elongated shelly tube. The tube is conical, somewhat curved; hence the name Tooth-shells. In n.w. N. America they were used as money, until the introduction of blankets by the fur traders; a fathom string of them was equal to goods worth £50; and as ornaments, they are found in Indian graves far inland.

DENTAL SCHOOLS: The Baltimore College of Dental Surgery, established 1839, was the first institution of the kind in the world. Other schools in the United States are: Ohio College of Dental Surgery (1845); Pennsylvania College of Dental Surgery (1856); Philadelphia Dental College (1863); New York College of Dentistry (1865); and dental departments at Harvard since 1867, University of Michigan since 1875, and University of Pennsylvania since 1878.

DENTAL SOCIETIES. In 1840 the American Society of Dental Surgeons, the pioneer of the associations to which dentistry owes so much of its progress, was organized in New York. The National Association of Dental Faculties, organized in 1884, has done much to strengthen courses of study in dental schools. At the time of its organization only those schools were admitted which had proper facilities for instruction and a corps of competent

teachers. From time to time standards have been raised by rules governing attendance, instruction, and graduation. There are at present 47 schools in the association, all of which require three full courses of dental lectures. The National Association of Dental Examiners was organized in 1883 to secure higher and more uniform standards for admission to dental practice.

DENTARIA, *dĕn-tā′rĭ-a:* genus of plants of the nat. ord. *Cruciferæ,* having a lanceolate compressed silique. *Dentaria bulbifera,* an English species, has a simple stem, the lower leaves pinnate, the upper leaves simple, and rose-colored flowers, the axils of the leaves producing bulbs and the creeping rhizome having tooth-like knobs, whence the name Dentaria, and the English name Coral-root. The root, dried, is said to have greater pungency than pellitory of Spain, and was formerly used in the same way for toothache. *Dentaria diphylla,* a N. American species, is called Pepper-root from the same property.

DENTA′TUS, Manius, or Marcus, Curius, Roman statesman, flourished in the first half of the 3d c. B.C. His first office was tribune of the people, in which he distinguished himself by his opposition to Appius Claudius Cæcus, who, in defiance of law, refused to receive any votes for plebeian candidates. In 290 B.C. he was consul with P. Cornelius Rufinus, and by his decisive victories over the Samnites terminated a war which had lasted for 49 years. In 275 B.C. he was again consul, and near Beneventum defeated King Pyrrhus. The triumph which followed was one of the most magnificent which had ever been witnessed, and was remarkable for the presence of four elephants, which were then seen for the first time in the streets of Rome. In 274 B.C. he was a third time consul, and after terminating the war with the Lucanians, Samnites, and Brutians, retired to his Sabine farm and spent the remainder of his life in cultivating it.

DENTELLA, n. *dĕn-tĕl′la* [L. *denticulus,* dim. of *dens,* a tooth]: genus of plants belonging to the order *Cinchonaceæ.*

DENTELLE, n. *dĕn-tĕl′* [F.—from L. *denticulus,* a little tooth]: in *bookbinding,* an ornamental tooling resembling notching or lace.

DENTEX, *dĕn′tĕks:* genus of acanthopterous fishes of the family of *Sparidæ* (sea-breams, etc.), having a deep compressed body, and generally perch-like form; a single dorsal fin, the anterior rays of which are spinous; scaly cheeks; and many small conical teeth, among which are in each jaw at least four large canine teeth, elongated, and curved inward. One species (*Dentex vulgaris*), the *Dentex* of the anc. Romans, abounds in the Mediterranean, and has occasionally been taken on the s. shores of Britain. It is sometimes called the Four-toothed Sparus. It attains a large size, sometimes three ft. in length, and 20 to 30 pounds weight. It is excessively voracious, as its large canine teeth might indicate, devouring other fishes; but

is itself in much request as an article of human food, and great numbers are taken in the mouths of rivers in Dalmatia and the Levant. It is there also a considerable article of commerce, being cut in pieces, and packed in barrels with vinegar and spices, in which state it will keep good for twelve months. It was preserved in the very same way by the ancients.

DEN'TIFRICE: substance, generally powder, sometimes paste or liquid, used in cleaning the teeth. Charcoal and cuttle fish bone-powder are useful as detergents; chalk, as a soft powder; and pumice, as a hard gritty substance for occasional use, when the teeth are more than ordinarily colored. Catechu, cinchona, and rhatany are used to give astringency to the tooth-powder; myrrh, to impart odor and to harden the gums; and bole armeniac, to communicate a red color. Common salt, cream of tartar, phosphate of soda, and sulphate of potash, are occasionally used; and where the breath has an unpleasant odor, the addition of 4 parts of bleaching-powder (chloride of lime) to the 100 of the tooth powder, removes the fetid character of the breath, and also tends to whiten the teeth. Fine qualities of soap are sometimes useful for cleansing teeth. Probably if any dentifrice is used besides cold water frequently, and occasionally a little soap, the best is simple chalk specially prepared by removal of gritty particles, and by reduction to a fine smooth powder. A few drops of any of the standard antiseptics added to water will often prove an efficient cleanser aided by the friction of the brush. The enamel of the teeth is liable to serious injury from many of the substances recommended for this use.

DEN'TILS, *dĕn'tĭlz*, in architecture, the little cubes or small squarish blocks resembling teeth, into which the square member in the bed-molding of an Ionic Corinthian, composite and occasionally a Roman Doric cornice is divided. Their breadth should be half their height, and the metoche (interval) between them two thirds of their breadth.

DENTIN, or DENTINE, *dĕn'tĭn*, the bone-like structure constituting the body of a tooth, which in the crown portion is covered by enamel and in the root portion by the *crusta petrosa* or cementum. See TEETH.

DENTIROSTRES, n. plu. *dĕn'tĭ-rŏs'trēz* [L. *dens*, or *dentem*, a tooth; *rostrum*, a beak]: an obsolete tribe of perching birds of the ord. *Insessores*, which have the upper mandible of the beak toothed or notched toward the extremity of its lower margin. DENTIROSTRAL, a., having a bill or beak notched or toothed. The tribe of birds known formerly as dentirostres was composed chiefly of insectivorous birds, though the Shrikes (*Laniadæ*), which belong to it, prey also on small birds, quadrupeds, and reptiles. Among the families of Dentirostres were *Merulidæ* (Thrushes, etc.), *Sylviadæ* (Warblers, etc.), *Ampelidæ* (Chatterers), and *Muscicapidæ* (Fly-catchers, etc.).

DENTISTRY.

DENTISTRY: The distinguishing factor of dental training, and one which is not required to the same degree in any other department of the healing art, is the manual skill and mechanical training needed for the successful practice of the prosthetic or restorative operations which the dentist is constantly called upon to perform. It was the lack of facilities in medical schools for obtaining the necessary training in the mechanical procedures of dental art that led to the establishment of the first dental college and placed dental education upon a basis independent of general medical education. The increase in knowledge of the diseases of the mouth and its contained organs and the growing recognition of the vital relationships of the oral tissues to the body as a whole, have gradually compelled the broadening of the dental educational curriculum until at present all of the fundamental medical sciences are included in the *curricula* of the best dental colleges, and upon this scientific foundation is erected the superstructure of technical education and manual training necessary to the art of the dentist.

The development of dentistry in America has been phenomenal, especially in all that pertains to its art side. The incorporation of the systematic teaching of mechanical dentistry in the college course instead of depending upon the uncertain educational results of the apprenticeship system has had greatly to do with creating a body of American practitioners skilled in their art. It is in fact for his skill as an operative dentist that the American practitioner has been mainly distinguished, while his contributions to the scientific basis of dentistry have been on the whole less voluminous than those of European practitioners, especially in the domain of original scientific research. The art of replacing lost portions of tooth crowns by gold fillings has had its great development in America, indeed as we know the operation to-day it may be said to have originated there. As originally practised the ideal gold filling was one which simply acted as a stopper inserted in a cavity produced by decay, for the purpose of excluding moisture and furnishing a surface sufficiently resistant to withstand the wear and tear of mastication. The filling was finished on a level with the cavity margins and no attempt was made to restore the lost contour of the tooth in imitation of its natural configuration. When, however, the discovery of the cohesive property of annealed gold foil was made and promulgated by Dr. Robert Arthur, of Baltimore, in 1855, the whole method of filling teeth with gold was revolutionized and complete artistic restoration of the normal configuration of the tooth by building with gold foil became the accepted ideal of practice. In connection with the general use of cohesive gold as a filling material certain ingenious and important devices came into existence as adjuncts to the operation of tooth-filling, having their origin in the necessities of the case. These were the dental engine, the mallet, and the rubber coffer-dam.

The operation of preparing the cavity for the reception of the gold involves the removal of decayed portions and frail margins, and giving to the cavity a retentive shape, so that the filling when inserted shall be solidly and immovably held in place. The early methods of cavity preparation were laboriously performed by small chisels and cutting instruments manipulated exclusively by the hand. Hand instruments were also exclusively used for the insertion and condensation of the gold foil in building the filling and subsequently giving it the required form and surface finish. The introduction of the dental engine run by foot-power, or as in its more recent modifications by electric motor, has not only greatly facilitated the operation of tooth-filling but has made possible more accurate and perfect results. So manifold have been the improvements made in the dental engine and its equipment of accessory appliances that it may, if the operator so desire, be used for every step of the operation from cavity preparation to the finished filling. As the cohesive property of gold, upon which its value in restoring the form of the tooth depends, is at once destroyed by contact with moisture, great difficulty was formerly experienced during large filling operations in excluding the gold from contact with saliva; napkins, bibulous paper and various mechanical devices were used for the purpose, but were often insufficient to prevent the destruction of a filling during the progress of its insertion. The device known as the rubber dam, introduced by Dr. S. C. Barnum of New York, about 1865, solved the problem of effectually excluding moisture from the teeth undergoing the filling operation and made possible more extensive and thorough restorations than had previously been attempted. The discovery of the usefulness of the cohesive property of gold in filling operations soon brought into requisition other means than simple hand pressure for condensing the gold foil into a solid homogeneous mass. It was soon found that greater solidity could be obtained by the percussive force of a mallet applied to the gold through the plugging instrument, so that the use of the mallet became general for the purpose, largely through the persistent advocacy of Dr. W. H. Atkinson of New York. The earlier forms of condensing mallets were simply hand mallets with heads made of various materials and different weights to attain desired variations in the impact and quality of the blow delivered upon the condensing instrument. Later, automatic mallets combining a plugging instrument and mallet were introduced. In these intruments the blow was produced by a hammer propelled by the release of a spring compressed by pressure, the malleting mechanism being contained in a casing connected with the plugging point which was applied to the surface of the filling upon which the impact of the blow was ultimately expended. In 1867, Dr. W. G. A. Bonwill, of Philadelphia, introduced his electro-magnetic mallet, an instrument which involved the principle of the Morse

telegraphic recorder so modified that the armature of the electro-magnet was effectively utilized as a mallet acting upon the free end of the gold-plugging instrument. With the automatic interrupter of the current afterward added to it the Bonwill instrument contributed greatly to the improvement of gold-filling operations both in the solidity of the gold, its more accurate adaptation to the walls of the cavity, and in lessening the fatigue and discomfort of both patient and operator incident to the operation. The blows delivered by the electro-magnetic mallet while light are extremely rapid, an advantage which its inventor sought to realize in a later device, to be used in connection with the dental engine, known as the Bonwill engine mallet, an instrument of high efficiency and the parent device of many subsequent modifications.

The extensive use of gold as a filling material and the perfection to which the technique of its use for that purpose has been developed, especially in America, has recently brought about a reactive tendency against the display of elaborate operations of gold, especially in conspicuous positions in the front teeth, æsthetic considerations stimulating the search for some substitute more in harmony with the texture and color of human teeth. Recently through the invention of an improved technique by Dr. C. H. Land of Detroit, Mich., and the further investigations of Dr. N. S. Jenkins, an American dentist resident in Dresden, Germany, the use of porcelain as a restorative material has become practically possible and bids fair to supplant gold as a filling, at least in conspicuous situations. The durability of porcelain restorations as compared with gold fillings remain to be tested by time and experience, but the immediate result is in all respects in favor of porcelain, especially in the matter of appearance, which so harmonizes with the teeth structure in color and texture as to be invisible when the operation is correctly performed. The filling of cavities is also extensively done with plastic materials that have the property of becoming hard in the course of time after having been inserted in a soft state. This class of materials includes the amalgams and cements, also guttapercha. Certain of these materials, the cements for example, serve only a temporary purpose, and their usefulness is therefore of limited duration. The amalgams, however, while unsightly in appearance, are extremely useful; being quite durable and capable of insertion without great difficulty, they can be used in cases of great loss of tooth structure, thus restoring many cases that could not otherwise be as successfully treated, and with less cost than gold filling.

Following the researches of Koch in bacterial pathology, the rŏle played by micro-organisms in the causation of dental diseases became the subject of study by numerous investigators, notably Prof. W. D. Miller, an American dentist resident in Berlin, through whose researches the cause of tooth decay was explained. Similarly the causal

relation of disease-producing micro-organisms to disorders of the dental pulp and the tissues surrounding the roots of teeth has been clearly made out, with the result that operations upon the pulp chambers and root canals of teeth in which the pulp has been devitalized by disease or design are now among the recognized conservative operations of dentistry. This advance in the treatment of pulpless teeth has made possible the permanent saving of multitudes of teeth in a condition of comfort and functional usefulness which were previously inevitably sacrificed or lost. Later investigations in the domain of dental and oral pathology are throwing light upon the causes and improving the modes of treatment of those diseases of the retaining tissues of the teeth which when unchecked result in their early loss by destruction of their attachment to the gums and alveolar sockets.

Dental art has in the development of its operative technique compassed the problem of defective tooth restoration, and has made possible the restoration not only of any portion of a single tooth, but of a whole tooth or any number of missing teeth. Where roots of teeth remain and are not hopelessly diseased or fractured, they form the foundations for that class of restoration known as crown- and bridge-work, the desirability and efficiency of which is directly proportioned to the skill and judgment expended upon its execution.

The grafting of artificial crowns of porcelain upon healthy natural roots is accomplished in a large variety of ways, the attachment being by metallic dowels cemented into the properly enlarged pulp canal of the root, this being in most cases reinforced by means of a gold collar or ferrule connected with the porcelain crown, closely encircling the periphery of the root at and slightly under the gum margin. Perfect adaptation of the crown and root end is obtained by correctly shaping the exposed portion of the root and then fitting to it a thin gold baseplate, to which is adapted the dowel and ferrule, after which the properly fitted porcelain crown is attached to this foundation by gold solder and a backing plate of gold connecting with the platinum pins of the crown. In certain cases hollow crowns made entirely of gold plate shaped to the contour of the original natural crown are used upon the roots of the grinding teeth instead of porcelain crowns, as they possess the advantage of superior durability. Aggregations of crowns permanently united upon their contiguous surfaces and supporting crowns in spaces where teeth have been extracted constitute so-called bridge work. No restorative operation in dentistry requires more judgment and skill, nor has any dental procedure been more abused in its performance than bridge work. Where the operation is intelligently and skilfully done it constitutes the most satisfactory result both as to comfort, utility, and appearance, that prosthetic dentistry has yet attained; otherwise it defeats the very object for which only it should be undertaken,

namely, the restoration of the denture to full functional usefulness and æsthetic appearance.

The department of dentistry technically known as mechanical or prosthetic dentistry comprises all those operations and the laboratory manipulation of the materials involved in the construction of substitutes for lost dental organs and parts of the oral tissues. Where lost teeth are to be replaced by means other than those described as crown and bridge work, it is done by mounting the porcelain crowns upon a base-plate adapted to the surface of the alveolar ridge and in the upper jaw usually to the surface of the palatal vault as well. An impression of the alveolar arch is taken in an impression tray containing a plastic material, which will subsequently harden, usually plaster of Paris or a modeling compound consisting of gum kauri, stearin, and talc; beeswax or beeswax and gutta-percha have been used, but are now practically abandoned for this purpose. Into the matrix formed by the impression a batter of plaster of Paris is poured, which after it has hardened forms the cast upon which the base-plate to support the artificial teeth in the mouth is constructed. The base-plate may be of vulcanite or of metal, and in the former case the porcelain teeth are adjusted to the cast by means of wax, and a wax plate is constructed which is the counterpart of the projected finished vulcanite plate. When the arrangement of the teeth to the wax trial plate has been found to be satisfactory by actual trial in the mouth of the patient, it is returned to the cast and the whole embedded in plaster of Paris contained in a sectional iron vulcanizing flask, similar in construction to the molding flask of the brass or iron founder. The upper and lower sections of the flask are separated after the investing plaster of Paris has fully hardened, and the wax is completely removed by a stream of boiling water, leaving a facsimile matrix in the plaster, which is then packed full of vulcanizable caoutchouc; the flask is then closed, and after being firmly bolted together is subjected to the action of the heat from superheated steam for about an hour at 320° F. in a vulcanizer. The case is allowed to cool, and when removed from the matrix the now thoroughly hardened plate is finished with a fine polish and is ready for insertion in the mouth. Metallic plates serving as the base of support for artificial teeth are constructed by stamping or swaging the flat plate cut approximately to the desired pattern, between male and female dies made from zinc and lead respectively, which have been obtained by casting the molten zinc into a sand matrix made from the plaster of Paris model of the alveolar arches. This furnishes a zinc model or male die, upon which a female die or counter-die of lead is cast, and between these the metallic base-plate is struck up to the form of the alveolar arch upon which it is intended to rest. Upon this base-plate porcelain teeth are fitted and attached by a metallic connection between the platinum pins(which for the purpose are baked in the porcelain texture of the

artificial teeth) and the base-plate, union being made by soldering. Dentures upon an enameled platinum base-plate constitute a form of work known as continuous gum work, in which, after the teeth by means of their pins have been united to the plate by soldering with pure gold, porcelain paste or 'body,' as it is technically called, is packed around the roots and between the teeth; then carved into form until the natural contour is reproduced. The piece is then subjected to high heat in a muffle until vitrified, after the manner of firing or baking china or pottery. It is next given a coating of enamel in imitation of the natural gum color, and after this has been fused in the muffle and the piece finally finished, it constitutes the most artistic, hygienic, and anatomically perfect denture of which dental art is capable.

The prosthetic department includes, besides the restoration of lost teeth, the construction of mechanism for the correction of palatal defects, whereby imperfect specch and deglutition are restored to practically normal condition; it includes also the construction of splints in the treatment of fractures of the jaws and the restoration of parts of the jaws lost by accident or disease; construction of mechanism for the correction of irregular positions of the teeth and for the restoration of facial deformities due to irregular or imperfect development of the jaws and bones of the nasal or facial regions. The correction of irregularities in the position of the teeth has developed such importance and covers such a wide field of study and work as to constitute a distinct specialty of modern dental practice. This department of dentistry is termed *orthodontia;* its importance is due not only to the cosmetic value of its results, but because of the direct bearing which irregular positions of the teeth and deformities of the dental arches exert upon the bodily health.

The whole field of dental and oral pathology has been so far developed by study and research as to place modern dental practice distinctly among the recognized specialties of the healing art. Most of the bacteria causing general bodily disease find access to the system through the mouth, which is also the habitat of many bacteria, benign and disease-producing as well. Hence the hygienic care of the mouth as a protction against disease invasion is of the utmost importance. Late researches have shown that the mouth, its tissues and its secretions, and the teeth themselves, furnish important indications of certain bodily diseases, malnutrition, etc., which are extremely valuable as diagnostic means. The training of the dental practitioner has therefore been enlarged so that in the foundation elements it is now coextensive with that of the practitioner of general medicine, but specialized with reference to its particular field of inquiry.

In the U. S. Alabama in 1841 enacted the first state law regulating the practice of dentistry. This was probably the first dental legislation in any country. The next state to pass a dental law was New York, but this action was

not taken till 1868. The English law was enacted in 1878, and those of other countries about that time or later.

Supervision.—The practice of dentistry is now regulated by statute in 52 political divisions of the United States.

In Alaska and Indian Territory, no statutory enactments are given. Examining boards are appointed in Alabama, Kentucky, North Carolina and South Carolina by the state dental associations; in District of Columbia by district commissioners; in Indiana by the governor, State Board of Health and dental association; in Nebraska by State Board of Health; in New York by the University of the State of New York; in Philippines by the Board of Health; in the remaining divisions by the governor, on recommendation, usually, of the state dental societies.

Licensing.—Interchange of licenses is highly desirable. An important step toward this was taken in 1898 when the New York dental law was amended so that the Regents now issue their license to any applicant who holds a license to practise dentistry granted by a State board of dental examiners, indorsed by the Dental Society of the State of New York, provided that his preliminary and professional education meets the New York statutory requirements. The dental examiners of Pennsylvania having been indorsed by the New York State dental society and recommended by the State dental examiners, the regents indorse Pennsylvania licenses granted under the new régime.

Licentiates of Other States.—Indiana admits licentiates of other States having equal requirements on 'signification of reciprocal courtesy;' Illinois on approved diploma from reputable dental or medical college, or on 10 years' practice; New Jersey and Pennsylvania, on proof of license from other State boards having equal requirements; New Mexico and Utah, on proof of diploma recognized by National association dental examiners; New York, on proof of license from another State board having equal requirements and indorsed by the New York State dental society, or on graduation from a registered dental school and six years' practice; District of Columbia, Louisiana, Michigan, Missouri, Nebraska, Nevada, North Dakota, Oklahoma, South Dakota, Tennessee, Wisconsin, on approved diploma from other States; Kansas, Kentucky, Ohio, Texas, on approved diploma from a dental college. In the remaining political divisions no provision is made in the law for admission of licentiates of other States.

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DENTITION.

DENTI'TION Period of: process of teething; the cutting or breeding of teeth. In man and most mammals, there are two distinct sets of teeth: one set which appears shortly after birth, and which are termed the *milk* or *deciduous* teeth; and a second set, which, after a few years, replaces these, and which are termed *permanent* teeth.

In the human subject, the milk-teeth are 20 in number, each jaw containing (from before backward) four incisors, two canines, and four molars; while the permanent teeth are 32 in number, each jaw containing four incisors, two canines, four premolars or bicuspids, and six molars. Anatomists are in the habit of briefly expressing the number of the different kinds of teeth in any mammal by what they term a *dental formula*. The permanent teeth in man are represented by the formula,

$$i\frac{2-2}{2-2}, c\frac{1-1}{1-1}, p\frac{2-2}{2-2}, m\frac{3-3}{3-3} = 32,$$

where the letters *i*, *c*, *p*, *m*, stand for incisors, canines, premolars, and molars, and where the two terms in each numerator and in each denominator represent the number of each particular kind of tooth in each half of the upper and lower jaw respectively. As these formulæ are of common use in most works on zoology and comparative anatomy, we add another example—that of the permanent teeth of the hog, whose formula is,

$$i\frac{3-3}{3-3}, c\frac{1-1}{1-1}, p\frac{4-4}{4-4}, m\frac{3-3}{3-3} = 44;$$

which signifies that there are on each side of both upper and lower jaws three incisors, one canine, four premolars, and three molars, making in all 44 teeth.

The following is the usual order and period of appearance of the milk-teeth: The four central incisors usually appear through the gums about the 7th month after birth, those of the lower jaw showing themselves first. The lateral incisors next appear between the 7th and 10th months, the anterior molars show themselves about the thirteenth month and are soon followed by the canines, which usually appear between the 14th and 21st months. The posterior molars are the last and most uncertain in their time of protrusion, which may range from the 18th month to the end of the 3d year. Except in the case of the incisors, there is no definite law as to whether the upper or lower teeth first appear.

About the middle or end of the 7th year the jaw-bones have become sufficiently elongated to permit the appearance of the first true molar; and about the same time, the central incisors are replaced by the corresponding permanent teeth. The advance of the permanent teeth toward the surface of the gum causes the absorption of the roots of the temporary teeth, and thus facilitates their shedding, the crown falling off, and leaving room for the permanent tooth behind it to come forward and supply its place.

In the replacement of the first by the second set of teeth, the following order is observed: The middle incisors are first shed and renewed (usually when the child is about eight years of age), and then the lateral incisors (perhaps a year later). The anterior molars of the first set are then replaced by the anterior premolars (usually about the 11th year); and about a year afterward the posterior deciduous molars are replaced by the second premolars. The persistent canines take the place of the deciduous ones in the 12th year; these being the last of the milk-teeth to be exchanged. The second molars appear between the ages of 12½ and 14 years, and the third molars, or *dentes sapientiæ* (wisdom teeth), seldom appear till 3 or 4 years subsequently, and often much later.

Mr. Saunders, an English dentist, has shown in his pamphlet, *The Teeth a Test of Age, considered with Reference to Factory Children*, that the teeth afford a far better test of age at this period of life, than the standard of height which has been adopted in British legislation. Children under the age of 9 years, are not to be employed in factories; and from 9 to 13 years, only part of the time. The teeth give good indications of these periods.

Dangers attending Teething.—The teeth are formed in closed sacs, and in rising to the surface in the progress of their growth they slowly penetrate the gum from below; a process familiarly called 'cutting the teeth.' The dangers to which children are exposed belong particularly to the period of the first dentition, or from five months old to two years or more. Infants are occasionally said to die of 'teething,' but this is one of those vague phrases that cloak ignorance; for the mere cutting of the teeth is never, by itself, mortal, or even a serious source of suffering. It becomes a cause of disease only by its reflected influence on the delicate nervous system of the child. The period of dentition, in fact, is one during which the whole organization of the infant is undergoing a revolution; in passing from an exclusively milk-diet to one of a more complex character, the entire digestive system undergoes a corresponding development. The diseases of this period of life correspond in importance with the great physiological changes taking place in it, and with the dangers of derangement in the just order or symmetry of their development. If these diseases often appear to be due directly to the cutting of a tooth, it is because complex causes of disorder have prepared the way for a morbid change, which is ready to be developed into activity by a comparatively slight irritation. The principal diseases of dentition are diarrhœa (q.v.), convulsions (q.v.), vomiting, and hydrocephalus, or tubercular inflammation of the membranes of the brain, which are more apt to originate at this period of infantile life, and to coincide more or less closely with the development of the first set of teeth. It is very doubtful how far the operation of cutting the gum with a lancet, so commonly supposed a specific for the diseases of dentition, ought to be encouraged. Sometimes there is evident

irritation, or even inflammation of the gum, and then the operation will probably at least do no harm; but the indiscriminating use of the gum-lancet, at the request of anxious but foolish mothers and nurses, is characteristic of a weak and erroneous routine practice, and must be denounced as an unwarrantable interference with the truly beautiful process by which the tooth is gradually evolved from its socket, in most cases, without any suffering.

D'ENTRECASTEAUX, *dŏngt'r-kâs-tō':* cape or headland in w. Australia, forming nearly the s.w. point of the continent; lat. 34° 52′ s., and long. 116° e. The name is one of the few traces of French discovery in that part of the world. It is applied also to an archipelago between New Guinea and New Ireland, about lat. 10° s., and long. 151° e. There are three chief islands separated by narrow channels, and they contain numerous boiling springs.

D'ENTRECASTEAUX: channel, an arm of the Pacific, separating Bruné Island from the s.e. coast of Tasmania or Van Diemen's Land. It is about lat. 43° 25′ s., and long. 147° 15′ e., is 35 m. long, and varies in width from 3 to 9 miles. On the side of the mainland, it is connected with the interior by means of the Derwent and the Huon, communicating through the former with Hobart-Town, the capital.

DENUDATÆ, n. plu. *dē-nū dā'tē* [fem. plu. of L. *denudatus*, pp. of *denudo*, I lay bare, I make naked]: an order in Linnæus's natural system. It contained the crocus and its allies.

DENUDE, v. *dĕ-nūd'* [F. *dénuder*—from L. *denūdārĕ*, to make naked—from *de*, *nūdus*, naked]: to make naked; to strip; to divest of all covering; to uncover. DENU'DING, imp. DENU'DED, pp. DENUDATE, a. *dĕn'ū-dāt*, in *bot.*, having a hairy surface deprived of hairs. DENUDATION, n. *dĕn'ū-dā'shŭn* [F.—L.]: the laying bare by removal; in *geol.*, removal of solid matter by the water in motion, whether of rivers or of the waves and currents of the sea, and the consequent laying bare of some lower rock. The rate of abrasion depends on the velocity of the current, and the nature of the solid materials through which it flows; these two causes equally affect the deposition of the abraded matter, for the carrying power of the water varies with its velocity and with the weight of the particles. The heavier débris—large stones and gravel—are carried short distances, and deposited generally in masses; the finer particles are conveyed even by a slow current to great distances, and scattered in thin layers over extensive districts All deposition, except in the case of showers of volcanic ashes, is the sign of a superficial waste going on contemporaneously, and to an equal extent, elsewhere, the gain at one point being equal to the loss at another. No new material has been used in the formation of the sedimentary rocks. The degradation and abrasion of igneous rocks provided the materials of the earliest strata; these in their turn were frequently abraded and redeposited, under new conditions, and with the remains of a

newer fauna and flora. Thus the crust of the globe has not actually increased in thickness, for whenever it acquires density in one place, it becomes thinner in another.

The changes that have been effected by denudation, and the amount of matter thus transported, are difficult to imagine. In districts where faults occur, the surface has been smoothed, and the uptilted ends have been washed away. These faults sometimes extend over several hundred sq. m., and the dislocations, had they remained unaltered, would have produced high mountains with precipitous escarpments. In regions with horizontal stratification, denudation has produced inequalities, hollowing out valleys of denudation, and often carrying away the whole of the superficial strata, leaving mountains here and there, in which case it is termed circumdenudation.

Such is 'sub-aqueous denudation.' Sub-aërial denudation' also has gone on through all ages, with the agency of water in the form of rain or frost only. When the crust of the earth was hot, the rapidly evaporating water descended in hot rain, charged with carbonic acid, fast disintegrating the rocks. The same process at a lower temperature is now in progress in warm climates, changing rocks to loose soil *in situ*. In colder climates, frost and ice disrupt and disintegrate rocks. Add to this the vast grinding and transporting work of ice in the Glacial period. From such causes towers and castles of rock have been left as vestiges of great beds of rocks, in the West,—wind-driven sand sometimes assisting in the work; the Catskills remain as monuments of vast deposits; also the Holyoke range, etc., as exposed trap dikes; and heights that would have been 20,000 ft. in the Alleghanies, as indicated by faults, are no more seen, or were reduced *pari passu* with elevation. Consult: Playfair, *Illustrations of the Huttonian Theory;* Lyell, *Principles of Geology;* Croll, *Climate and Time*, and the standard text-books of geology.

DENUNCIATION, n. *dĕ-nŭn'sĭ-ā'shŭn* or *-shĭ-ā'shŭn* [L. *denuntĭātĭōnem* (see DENOUNCE)]: a declaration of intended evil; a public menace. DENUN'CIA'TOR, n. *-shĭ-ā'-tėr*, one who. DENUN'CIATOR'Y, a. *-ă-tėr'ĭ*, containing a denunciation.

DENVER, *dĕn'ver*, Colorado, capital of the state and of Arapahoe co., 639 m. w. of Kansas City, 538 from Omaha, 1,457 from San Francisco, and 2,025 from New York. It is the chief metropolis of the entire Rocky Mountain region between the Missouri river and the Pacific coast, and it is the principal mineral smelting centre of the United States. The site of the city is about 10 m. e. of the base of the foot-hills of the Rocky Mountains, in the valley of the south fork of Platte River, at its junction with Cherry Creek, a dry stream which carries water only at intervals. The city is laid out in broad and regular streets, running n.w. and s.e., and the buildings are substantial, modern in style of architecture, and pleasing in their general appearance of newness and freshness. The atmosphere is so rarefied that on a clear day

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the peaks of mountains can be seen at a distance of 150 miles, and on nearly all occasions an excellent view can be had of Pike's Peak, 76 m. distant. Long's Peak and Gray's Peak, two other famous mountains at about the same distance, can also be seen with perfect distinctness. Indeed, the climate of Denver is perhaps the most remarkable in the world; the summers are characterized by warm days and cool nights, the heat of the day being unattended by the usual debilitating effects, while the winters are characterized by abundance of sunshine, and a general absence of snow and severe and long-continued cold.

History.—The city was named in honor of Gov. James W. Denver (q.v.), who suggested the name of Colorado for the territory formed out of the state of Kansas, of which he was at the time governor. The first family located there in 1858, Aug.; the first hotel was built in 1859, Feb.; the first election was held 1859; Mar.; the first express coach arrived 1859, May; the first legislative body in the territory assembled in Denver 1859, Nov., and granted a charter to Denver City; and the first election and formal organization under the charter took place 1859, Dec. 19. Owing its existence to the discovery of gold at Pike's Peak, its location made it the gateway to the mines, gave it the bulk of all the travel, and caused it to be known as the 'Queen City of the Plains.' In 1863, it was almost entirely destroyed by fire, and again, 1864, by flood. The first railroad connection between Denver and the outer world was made 1868, when the Denver Pacific was completed to Cheyenne, distant 106 m., and there united with the Union Pacific. The progress of Denver has been rapid in every respect, and substantial withal. It has experienced costly disasters by fire, flood, financial panics, and industrial depressions; but through the eminently practical character of its citizens its recuperations have been speedy. In 1894 the town of South Denver was annexed, the combined cities assuming the municipal debts of each.

Public Utilities.—The public utilities are modern in every particular. The street cars are operated by the overhead trolley system, covers some 150 miles of streets; carry each year over 50,000,000 passengers. Gas, electric light and electric power are furnished by the Denver Gas and Electric Company, and the Lacombe Electric Company. The Denver City Steam Company supplies many business buildings with steam-heat, and operates 10 m. of pipe line. Telephonic communication is had between Denver and 227 of the principal towns in Colorado, Wyoming ,and New Mexico. The city's water supply is furnished by the Denver Union Water Company, which takes the water from the Platte river, Bear creek, and Cherry creek. The greater portion of the waters are drawn during the non-irrigating season and stored in large and extensive reservoirs. The waters from these reservoirs percolate through natural filter beds of sand, before entering the city mains. Probably no city in the

world possesses better drinking water. As a commercial city Denver is increasing in importance each year In manufacturing it produced in 1890 some $30,000,000 worth of products; in 1902 $48,750,000 represented the value of goods made in this city. As the trade territory increases in population, the jobbing trade also increases, and in round numbers the wholesalers of the city sold in 1902 approximately $50,000,000 worth of goods. The banking and financial institutions are strong. The five national banks of the city reported their deposits for 1902 as amounting to $43,852,605.

Schools and Libraries.—No educational advantage is denied any pupil in Denver's free schools. They start with the children in the kindergarten and carry them through 12 grades ready to enter college, or with a fair education in all branches of study if school life is to end with the public school. Besides the regular grammar and high school studies, the children may have manual training, special training in cooking and sewing, modern and ancient languages, music and drawing, with special preparation for advanced work in technical schools. The school property is valued at about $4,000,000; annually there is spent for maintaining the schools about $800,000. In addition to the city libraries there is a medical library of several thousand volumes, six law libraries, school libraries containing 60,000 volumes, exclusive of text-books, and at the capitol building a State library numbering over 15,000 volumes.

Newspapers, Parks, etc.—Denver has 4 daily newspapers, 35 weekly papers, and a number of trade journals. There are 12 parks with a total area of 550 acres; the largest, the city park, contains 320 acres; and 156 church buildings. The public works have kept pace with the advance in other directions. Extensive storm and sanitary sewer systems, carefully graded, curbed, and paved streets, uniform sidewalks of first-class material, and massive steel viaducts are some of the indications of the progress. In 1902 there were 62 miles of sidewalks laid and 45 miles of streets graded and rounded ready for paving or surfacing. The estimated cost of the improvements now under way (1903) amounts to $1,068,338. The taxable property amounts to $133,686,076, and the net public debt to $4,052,199. Pop. (1900) 133,859; (1910) 213,381.

DENVER, James W.: politician: 1818–1892, Aug. 9; b. Winchester, Va. He received an ordinary school education, and with his parents removed to Ohio, and then to Mo., where he settled in 1841. He studied law and was admitted to the bar, but was made Capt. 12th infantry 1847, and went through the Mexican war. He settled in Cal. 1850, became state sen., sec of state, and member of congress from that state 1855–57. Afterward he removed to Kansas and was elected gov. He was twice appointed commissioner of Indian affairs; and for two years served in the Union army, with the

rank of brig. gen. Denver was chairman of the committee on the Pacific R.R. in the house of representatives 1854-5, and did much to advance that enterprise. The city of Denver (q.v.) in Colo. was named from him. While in congress, he had a dispute with Edward Gilbert, an ex-member, which resulted in a duel, in which Gilbert was killed.

DENVER, UNIVERSITY OF: institution under the auspices of the Meth. Episc. Church, at Denver, Colo., 1880, for both sexes. It comprises colleges of liberal arts, medicine, dentistry, pharmacy, theol., fine arts, music, and manual training; also business coll. and post-graduate school. The Chamberlin observatory, the gift of H. B. Chamberlin, with its 20-inch telescope, is on an elevation about 5,000 ft. above sea level, and forms a dept. of the univ.—Vols. in library 12,000. Aggregate endowment, $214,000. Students about 1,500; faculty, 172.

DENY, v. *dĕ-nī′* [F. *dénier*, to deny; *déni*, denial—from L. *dedĕgārĕ*, to deny thoroughly—from *de*, *nego*, I deny: It. *denegare*]: to declare untrue; to contradict; to disown; to refuse; to reject; not to afford, as to deny one's self. DENY′ING, imp. DENIED, pp. *dĕ-nīd′*. DENI′ER, n. *-ĕr*, one who. DENI′ABLE, a. *-ă-bl*, capable of being denied or disowned. DENI′AL, n. *-ăl*, a refusal.—SYN. of 'deny': to refuse; contradict; disavow; disown; repudiate; disclaim; withhold; abjure.

DEOBSTRUENT, n. *dĕ-ŏb′strŭ-ĕnt* [L. *de*, *obstrŭĕns*, building up to stop the way]: antiquated term for a medicine which opens the natural passages for the fluids of the body; supposed to have the property of removing obstructions, especially in the Lymphatics (q.v.). The favorite deobstruent remedies were mercury, iodine, and bromine; also blisters and friction, with stimulating liniments: ADJ. having the power to remove obstructions.

DEOBUND, *dē′o-bŭnd:* town of India, in the British dist. of Saharunpore, N. W. Provinces, 20 m. from Saharunpore, on the railway route from Saharunpore to Mozuffurnuggur. It is in an open cultivated country between the rivers Hindun and Kali-Nuddee, one a branch of the Jumna, the other of the Ganges. Pop. (1881) 22,116.

DEODAND, n. *dē′ō-dănd* [L. *dĕō*, to God; *dandus*, to be given]: in *law*, formerly, a personal chattel, a thing which had caused the death of a person, and for that reason was forfeited to the king, and applied by him to pious uses, or given to God, as the term implies. The rule did not apply where the instrument had been intentionally used for the purpose of causing death, as in cases of murder and homicide. Blackstone traces the origin of the custom to prayers for the souls of the dead, and asserts that deodands were designed 'as an expiation for the souls of such as were snatched away by sudden death; in the same manner as the apparel of a stranger, who was found dead, was applied to purchase masses for the good of his soul.' The more probable view is, that it originated in the natural hor-

ror for whatever has been the instrument of so dreadful an occurrence; as in the Jewish law, that if 'an ox gore a man that he die, the ox shall be stoned, and his flesh shall not be eaten;' or the old English law, that a well in which a person was drowned should be filled up under the inspection of the coroner. Similar regulations are in the legal systems of most nations. The law of deodand was abolished by statute 9 and 10 Vict. c. 62.

DEODAR′: see CEDAR.

DEODORIZE, v. *dē-ō′dėr-īz* [L. *de, odor*, a smell, good or bad]: to deprive of a fetid or bad smell, as cesspools; to disinfect. DEO′DORI′ZING, imp. DEO′DORIZED, pp. *-īzd*. DEO′DORI′ZER, n. *-ī′zėr*, or DEO′DORANT, n. *-dėr-ănt*, a substance that absorbs or destroys smells; a *disinfectant* destroys not only smells, but also the poisons accompanying them, by acting chemically. DEO′DORIZA′TION, n. *-ī-zā′-shŭn*, the art or act of depriving of odor or smell: see ANTISEPTICS: DISINFECTANTS.

D'ÉON, CHEVALIER: see ÉON DE BEAUMONT.

DEONTOLOGY, n. *dē′ŏn-tŏl′ŏ-jĭ* [Gr. *deonta*, things fitting, moral duties; *logos*, discourse]: the science which relates to duty or moral obligations. DE′ONTOLOG′ICAL, a. *-lŏj′ĭ-kăl*, pertaining to. DE′ONTOL′OGIST, n. *-jĭst*, one who.

DEOXIDATE, v. *dĕ-ŏks′ĭ-dāt* [L. *de*, and *oxidate*]: to deprive of oxygen. DEOX′IDATING, imp. DEOX′IDATED, pp. DEOX′IDA′TION, n. *-dā′shŭn*, the process of withdrawing the oxygen from a compound, as in the reduction of the native peroxide of iron in the smelting furnaces to the condition of metallic iron: on the small scale, in experimental inquiries, it may be carried on before the BLOW-PIPE (q.v.), where the inner or reducing flame is essentially deoxidating. DEOX′IDIZE, v. *-dīz*, to deprive of oxygen; also DEOX′IGENATE, v. *jĕn-āt*. *Note.*—DEOXIDIZE is used in the same sense as DEOXIDATE, and is more commonly in use; strictly, however, DEOXIDIZE is to take oxygen out of a chemical compound and thus form a new one. DEOXIGENATE is to take away oxygen that has been merely dissolved or mixed, and has not been in chemical combination.

DEPART, v. *dĕ-pârt′* [F. *départir*, to depart, to distribute—from OF. *despartir*—from L. *dispatīrĕ*, to distribute—from *de* for *dis; partīrī*, to part, to share]: to quit; to go from; to leave; to forsake; to desist; to die or decease: N. in *OE.*, departure; death. DEPAR′TING, imp.: N. departure. DEPAR′TED, pp. DEPAR′TURE, n. *-tūr*, the act of departing; a moving from; death or decease; a forsaking; in *nav.*, distance made e. or w. by a ship at sea: see SAILINGS: DEAD RECKONING.—SYN. of 'departure': demise; release; exit; separation; removal; deviation; abandonment.

DEPARTMENT, n. *dĕ-pârt′mĕnt* [F. *département*—from *départir*, to depart (see DEPART)]: a separate room or office for business; a branch of business. In *France*, a division of territory equivalent to an English county. In the *United States*, a division of executive governmental work, under

the charge of a member of the president's cabinet, known as a secretary: the departments are—State, Treasury, War, Navy, Justice, Post-office, Interior, Agriculture, Labor and Commerce: also a milit. territorial command (see DIVISION) DE'PARTMEN'TAL, a. *-mĕn'tăl*, pertaining to a department or division.

DEPART'MENT: a territorial division in France. Previous to the Revolution, France was divided into provinces; but in 1790 Mirabeau rose in the constituent assembly, and declared that, after having abolished aristocracy, it was neither convenient nor safe to preserve these provincial divisions. He alleged that they were too large, that they tended to concentrate the administrative power in the hands of a few, and that such power soon becomes aristocratic of necessity. He suggested, therefore, a minuter territorial division, as a carrying out of the principles of the Revolution. This expression of opinion was followed by a decree of the assembly, dated 1790, Feb. 16, ordering the abolition of the old provincial divisions (34 in number), and the redistribution of the land into 83 departments. During the year 8 of the Revolution, these were increased to 98; in 1808 the empire consisted of 127; at the fall of Napoleon, of 130; and at present it consists of 87, including the sadly diminished Department of Haut Rhin (from 1871–79, 'the territory of Belfort'). Originally, it was intended that the departments should be governed by persons elected by the citizens; but this plan did not suit the views of the first consul, who placed over each department a prefect, and a *conseil de préfecture*. The departments were again subdivided into arrondissements, over each of which was placed a sub-prefect (*sous-préfet*). The right of naming these functionaries was reserved to the chief of the state.

DEPARTMENT STORE: a large estab. for the sale of merchandise at retail. 'Many of the former dry-goods stores display goods in almost every branch, and have become known as department stores. Large sales, 'bargain counters,' and newspaper advertising are their distinguishing features.

DEPASTURE, v. *dĕ-pas'tūr* [L. *de*, *pastus*, a feeding or eating (see PASTURE)]: to feed; to graze; to eat up. DEPAS'TURING, imp. DEPAS'TURED, pp. *-tūrd*.

DEPAUPERATE, v. *dĕ-paw'pĕr-āt* [L. *de*, *paupĕrātus*, made poor—from *pauper*, poor]: to make thoroughly poor, to impoverish: ADJ. in *bot.*, impoverished. DEPAU'PERATING, imp. DEPAU'PERATED, pp.

DEPAUW, *dē-paw'*, WASHINGTON CHARLES: philanthropist: 1822, Jan. 4—1887, May 5; b. Salem, Ind. He was educated at Washington co. seminary, filled a number of local offices till 1856, after which he was employed in farming and milling, and in perfecting the manufacture of plate-glass. For this purpose he expended half a million dollars, and 10 years of application, being at length completely successful. In this manufacture, in which he

equalled the best in the world, Depauw became very wealthy. He used much of his riches to aid the city of New Albany, Ind., where he lived, endowed Depauw Univ. (q.v.), and Depauw Female Coll., New Albany, Ind., which has been transformed into a hospital and deaconess' home.

DEPAUW UNIVERSITY: a Meth. Episc. institution at Greencastle, Putnam co., Ind., originally the Indiana Asbury University, under which title it was chartered 1837, Jan. 10. It received its present title, with a large endowment, from Washington C. Depauw. Its facilities are offered to both sexes, and it comprises a college of liberal arts, and schools of theology, law, music, fine art (drawing, painting, wood carving), milit. science, with a preparatory school. It has a library of 28,000 vols., present endowment $355,000, annual receipts from fees $59,000, and receipts from the Depauw estate, $10,000. It will have in a few years an endowment of more than $1,000,000. Total of students in all depts. (1905), 742. instructors, 41. Including those who have received honorary degrees it has over 2,300 alumni. Its students have been very successful in intercollegiate debates and oratorical contests. Its pres. is Edwin M. Hughes, S.T.D.

DEPEND, v. *dĕ-pĕnd'* [L. *dependērĕ*, to hang down—from *de*, *pendĕō*, I hang: It. *dependere;* F. *dependere*, to be dependent on]: to hang down from; to be connected with a thing as a cause of existence, etc.; to be subservient; to rely on; to trust; to confide. DEPEND'ING, imp. DEPEND'ED, pp. DEPEND'ABLE, a. *-ă-bl*, that may be depended on; trustworthy. DEPEN'DENT, [L. *dependens*, hanging down], or DEPENDANT a. [F.]: hanging from; relying on; subject to the power of. DEPEN'DANT, n. one who is at the disposal of another; one relying on another for support or favor; a servant or retainer. DEPEN'DENCE, n. *-dĕns*, reliance; trust; connection; state of being at the disposal of another; that which is attached to something else as subordinate. DEPEN'DENTLY, ad. *-dĕnt-lĭ*. DEPEN'DENCY, n. *-dĕnsĭ*, same as *dependence*, but usually restricted to a territory or colony distant from the state to which it is subject. DEPEND UPON, to rely on; to trust to with confidence.

DEPEW, *dē-pū'*, CHAUNCEY MITCHELL: b. Peekskill, N. Y., 1834, Apr. 23: lawyer. He is of Huguenot and Puritan ancestry, graduated at Yale College 1856, engaged in the presidential campaign for Fremont immediately afterward, studied law, and was admitted to the bar 1858. In 1860, he worked for the election of Lincoln; 1861–2, was a member of the N. Y. assembly and served some time as chairman of the committee of ways and means and as acting speaker; 1863, elected sec. of state by over 30,000 majority; 1865, declined a renomination; and 1866, was commissioned collector of the port of New York by Pres. Johnson, who afterward tore up the commission in a quarrel with Senator Morgan. He was appointed U. S.

minister to Japan, and after holding the commission a month declined, and began his railroad career with the appointment as attor. for the New York and Harlem railroad by Cornelius Vanderbilt. He was made attor. and a director of the consolidated Hudson River and New York Central railroads 1869, general counsel of the whole Vanderbilt system 1875, second vice-pres. of the reorganized New York Central railroad 1882, and pres. 1885. His political career since 1866 embraces his unsuccessful candidacy for lieut. gov. on the liberal republican ticket 1872, his election by the legislature as a regent of the State Univ. 1874, his candidacy for U. S. senator to succeed Thomas C. Platt, in which he withdrew his name after 82 days of balloting 1881, his declination of the U. S. senatorship tendered by the republicans of the legislature 1884, his candidacy for the pres. nomination in the national convention 1888, and his election to the U. S. Senate 1899. He has an international reputation as an unusually entertaining after-dinner speaker, is constantly in request as a lecturer, and has delivered several addresses of public importance, notably that at the unveiling of the Bartholdi statue, for which the French govt. presented him two vases, a costly bronze and a unique Sevres. Mr. Depew is one of the corporation of Yale Univ. He has published collections of his orations and after-dinner speeches in one volume (1890), and his later speeches.

DE PEYSTER, *de pīs'tĕr*, Abraham: military officer, and chief-justice and treas. of the province of N. Y., etc.: 1658, July 8—1728, Aug. 10; b. New York; eldest son of Johannes De Peyster (q.v.). He was a prosperous merchant, was mayor of the city 1691–95, and acting gov. of the province 1701; also col. of the milit. forces. His house, whose site is now 178 and 180 Pearl st., was built 1695, and remained till 1856: it was the headquarters of Washington. The bell which he gave to the Middle Dutch church in Nassau st., can now be heard as it hangs in the Collegiate (marble) church, Fifth ave., cor. 29th st.

DE PEYSTER, Arent Schuyler: 1736, June 27—1832, Nov.; b. New York; grandson of Col. Abraham De Peyster (q.v.), and nephew of Col. Peter Schuyler, 1st (q.v.). When only 19 years old he enlisted in the 8th foot regt. for services in the war with France, and was on duty with his uncle at various important posts. In the revolutionary war he was a col. in the royal army, was at different times in command of the British posts of Detroit, Mackinac, and elsewhere in Canada, and by his influence among the Indians of the northwest converted them from enemies to friends of the British cause. After the war he retired to Dumfries, Scotland, and enlisted and drilled a regt. of local volunteers during the French revolution. Robert Burns was one of its members, and dedicated to De Peyster his poem on 'Life.'—His nephew, Arent Schuyler De Peyster, was a navigator, discoverer of the 17 islands named from him in the S. Pacific.

DE PEYSTER, Frederick, Jr., ll.d.: lawyer: 1796, Nov. 11—1882, Aug. 17; b. N. Y.; third son of Frederick De P., Brit. soldier, who was great-grandson of Col. Abraham De P. (q.v.). He graduated at Columbia Coll. 1816, began practice of law 1819, was master in chancery 1820–37. At various times he rendered public services in many capacities—as trustee of the Amer. Bible Soc., pres. of the New York Historical Soc., trustee of the New York Society Library, a founder and director of the Home for Incurables, vice-pres. of the soc. for prevention of cruelty to children, founder of the Soldiers' Home (built by the Grand Army of the Republic). He inherited a large estate, which increased greatly in value during his life.

DE PEYSTER, Johannes: merchant: about 1600—1685; b. Haarlem, Holland; of French Huguenot family which fled to Holland from persecution. He was one of the early settlers of New York, became prominent in public affairs during the Dutch possession, was one of the last to swear allegiance to the crown after the English succeeded to the govt., served several times as alderman and deputy mayor, and was frequently urged to become mayor by the British residents, but declined from ignorance of the language. One son, Abraham De P. (q.v.), became pres. of the king's council, and acting gov.; another, Johannes, mayor; a third, Isaac, member of the legislature; and a fourth, Cornelius, first chamberlain of New York.

DE PEYSTER, John Watts: officer of militia, and milit. uthor: 1821, Mar. 9————————; b. New York; son of Frederick De P., Jr. (q.v.). He studied for a time at Columbia Coll.; was chosen col. 11th regt. N. Y. militia 1845; later was assigned to command the 22d dist., and was promoted brig.gen. of militia 1851, and brevetted maj.gen. 1866—the last an unusual honor from a state legislature. He gave much attention to the organization of the New York city paid fire-dept. and of the police force. Besides contributing largely to periodical literature, he has taken rank among the foremost military historians. Among his works are: *Life of Field-Marshal Torstenson*—of Sweden, 17th c. (1855), for which he received three medals from Oscar I., king of Sweden; *The Dutch at the North Pole* (1857); *Carausius—the Dutch Augustus* (1858); *Life of Baron Cohorn* (1860); *Personal and Military History of Gen. Philip Kearney* (1869). He published also histories of the Third Corps of the Army of the Potomac, of the last campaign of that army, and of the decisive battles of the civil war. —His three sons rendered gallant service in the war for the Union—the eldest, Col. John Watts De P., Jr. (1841–73), dying of disease contracted in the service.

DEPHAL, *dĕp'hal* (*Artocarpus Lakoocha*): tr[illegible] of the same genus with the Bread-fruit (q.v.) and Jack (q.v.), native of the south of India, and frequently cultivated in the north of that country. The fruit is eaten, but is inferior to the jack. The juice, like that of the bread-fruit, is

tenacious, and is used for bird-lime. The root is used for dyeing yellow. The D. is a large tree, and its timber is valued for a variety of purposes.

DEPHLOGISTICATE, v. *dē'flō-jĭs'tĭ-kāt* [L. *de*, and *phlogiston*]: to deprive of phlogiston, the supposed principle of inflammability. DE'PHLOGIS'TICATING, imp. DE'PHLOGIS'TICATED, pp. DE'PHLOGISTICA'TION, n. *-kā'shŭn*, the operation by which bodies are deprived of phlogiston (q.v.).

DEPICT, v. *dĕ-pĭkt'* [L. *depictus*, depicted—from *de*, *pictus*, painted]: to paint; to portray; to describe or represent in words. DEPIC'TING, imp. DEPIC'TED, pp.

DEPILATE, v. *dĕp'ĭ-lāt* [L. *depilātus*, having the hair pulled out—from *de*, *pilus*, a hair: F. *dépiler*, to take the hair off]: to strip off hair. DEP'ILATING, imp. DEP'ILATED, pp. DEP'ILA'TION, n. *-lā'shŭn* [F.—L.]: the act of taking the hair off; loss of hair. DEPILATORY, a. *dĕ-pĭl'ă-tĕr-ĭ* called also EPILATORY [OF. *depilatoire*]: having the quality or power of removing hair: N. any ointment or lotion for removing superfluous hair from the skin. Depilatories were extensively used by the ancients, but are now used only for the face, and for the removal of the hair from the scalp in the treatment of certain diseases. The caustic alkalies and alkaline earths are generally used, and a good recipe is to mix five parts of caustic or slaked lime, ten parts of carbonate of soda, and forty parts of lard. The tersulphuret of arsenic (commonly known as orpiment) is occasionally used, but it is dangerous, especially if there be the least abrasion of the skin. A mixture of caustic lime and orpiment constitutes some of the depilatories for sale in the shops, and it is believed that the Turkish *Rusma* is composed of these ingredients. A very active and comparatively (not absolutely) safe compound is a strong solution of sulphuret of barium made into a paste with starch, immediately applied to the part from which the hair is to be removed, and allowed to remain for five or ten minutes.

DEPLANATE, a. *dē'plăn-āt* [L. *deplanātus*—from *plānus*, level or flat]: in *bot.*, flattened.

DEPLETE, v. *dĕ-plēt'* [L. *deplētus*, emptied out—from *de*, *plĕō*, I fill]: to empty out; to reduce in quantity by taking away. DEPLE'TING, imp. DEPLE'TED, pp. DEPLE'TION, n. *-shŭn*, act of emptying out; the act of diminishing the quantity contained. DEPLE'TORY, a. *-tĕr-ĭ*, calculated to diminish fulness of habit; also DEPLE'TIVE, a. *-tĭv*.

DEPLORE, v. *dĕ-plōr'* [F. *déplorer*—from L. *deplorārĕ*, to weep bitterly—from *de*, *ploro*, I wail or howl: It. *deplorare*]: to weep bitterly for; to lament; to mourn; to bewail; to express or feel deep grief for. DEPLO'RING, imp. DEPLORED', pp. *-plōrd'*. DEPLO'RER, n. one who. DEPLO'RABLE, a. *-ră-bl* [F.]: lamentable; sad; grievous; miserable. DEPLO'RABLY, ad. *-blĭ*. DEPLO'RABLENESS, n. *-bl-nĕs*, wretchedness; miserable state. DEPLO'RABIL'ITY, n *-ră-bĭl ĭ-tĭ*, state of being deplored; deplorableness. DEPLO'-

RINGLY, ad. *-lĭ.*—SYN. of 'deplore': to mourn; bemoan; complain; murmur; repine; regret; weep.

DEPLOY, v. *dĕ-ploy'* [F. *déployer*, to unfold—from L. *de*, *plĭco*, I fold]: to unfold; to open; to extend; to form a more extended front, as soldiers. DEPLOY'ING, imp. DEPLOYED', pp. *-ployd'*. DEPLOY'MENT, n. the opening out of a body of men in order to extend their front, while lessening their depth, as a column of troops.

DEPLUME, v. *dé-plôm'* [F. *déplumer*—from L. *de*, away; *pluma*, a feather]: to pluck or strip the feathers from; to deprive of plumage; to lay bare; to expose. DEPLUMATION, n. *dē-plô-mā'shŭn*, a plucking or stripping of the feathers; a loss of feathers.

DEPOLARIZE, v. *dē-pō'lĕr-īz* [L. *de*, and *polarize*]: to deprive of polarity. DEPO'LARIZA'TION, n. *-ī-zā'shŭn*, the act of depriving of polarity. See BATTERY, ELECTRIC.

DEPONE, v. *de-pōn'* [L. *dĕponĕrĕ*, to lay or place down—from *de*, *pono*, I place]: to lay or place down solemnly in words; to testify on oath in a court. DEPO'NING, imp. DEPONED', pp. *-pōnd'*. DEPO'NENT, a. *-pō'nĕnt* [L. *deponen'tem*, laying down]: in *Latin grammar*, applied to verbs having a passive form but an active signification; so called because they, as it were, lay down or dispense with the signification proper to their form. Such verbs had all originally a reflexive meaning, like the middle voice in Greek verbs; thus, *aversor*, 'I detest,' means radically, 'I turn myself away from.' DEPONENT, n. one who testifies on oath; a witness.

DEPOPULATE, v. *dĕ-pŏp'ū-lāt* [L. *depopŭlātus*, laid waste—from *de*, *pŏpŭlus*, the people]: to deprive of inhabitants; to unpeople; to lay waste. DEPOP'ULATING, imp. DEPOP'ULATED, pp. DEPOP'ULA'TION, n. *-lā'shŭn* [F.—L.]. DEPOP'ULATOR, n. *-tĕr*, one who.

DEPORT, v. *dĕ-pōrt'* [F. *déporter*, to banish—from L. *deportārĕ*, to carry off—from *de*, *porto*, I carry: It. *deportare*, to exile]: to carry from one country to another; to behave or demean, followed by *self*. DEPORT'ING, imp. DEPORT'ED, pp. DEPORTATION, n. *dē'pŏr-tā'shŭn* [F.—L.]: forcible and general removal from one country to another; exile; banishment. DEPORT'MENT, n. *-mĕnt* [F. *déportement*, demeanor]: conduct; demeanor; carriage; manner of acting in relation to the duties of life.—SYN. of 'deportment': gait; walk; behavior; demeanor; bearing.

DEPOSE, v. *dĕ-pōz'* [F. *déposer*—from L. *de*, *pausārĕ*, to pause; mid. L. *pausārĕ* for *ponĕrĕ*, to place: It. *depositare* (see DEPOSIT)]: to set down from an office; to degrade; to divest of office; to dethrone, to bear witness on oath. DEPO'SING, imp. *-zĭng*. DEPOSED', pp. *-pōzd'*. DEPO'SER, n. one who.

DEPOSIT, n. *dĕ-pŏz'ĭt* [F. *dépositer*, to lay down as a gage—from L. *depositum*, a thing laid down—from *de*, *pono*, I place]: that which is intrusted to another, as money in a bank; a pledge or pawn; anything laid down or lodged:

in *geol.*, soil or matter laid down from water or otherwise, and forming a layer or stratum; such materials are obtained by denudation (q.v.), and are classified as marine, lacustrine, fluviatile, etc.; in *med.*, the secretion of a solid morbid substance on a diseased surface: V. to lay, throw down, or lodge; to lay up; to commit to, as a pledge; to place money in a bank. DEPOS'ITING, imp. DEPOS'ITED, pp. DEPOSITARY, n. *-ĭ-tĕr-ĭ*, one with whom anything is lodged or intrusted for safe keeping. DEPOSITORY, n. *dĕ-pŏz'ĭ-tĕr-ĭ*, a place where anything is laid for safe keeping. DEPOS'ITOR, n *-tĕr*, one who makes a deposit. DEPOSITION, n. *dĕ'pō-zĭsh'ŭn* [F.—.L.]: the act of laying or throwing down; that which is laid down; the giving testimony under oath; a written copy of the same attested by the signature of the witness; the depriving of office or dignity. ON DEPOSIT, in charge or safe keeping, as money.

DEPOSIT, in geology: a layer of soft or hard matter formed by the settling down of mud, gravel, stones, detritus, organic remains, etc., which had been held in suspension in water. Marine deposits are those formed on sea bottoms; lacustrine, those formed at the bottoms of lakes; fluviatile, those formed on river bottoms; and so on. In contradistinction to bed or layer, which is matter more evenly distributed during formation, a deposit is nearly always irregular in form. See GEOLOGY.

DEPOSIT, in law: a term of wide meaning but especially applied to money paid as an earnest or security for the performance of a contract; also to money belonging to one person intrusted to the safe-keeping of another, to be kept without fee, and to be re-delivered on demand. When such a deposit is made to a bank or trading company, interest, according to agreement, is generally paid on it. The person who makes the deposit is called the depositor, and the person who receives the deposit is called the depositary. By the civil law, deposits are divided into two classes, necessary and voluntary. The first class is where the depositor is compelled by some sudden emergency, such as fire or shipwreck, to confide his property to some one, without having opportunity for choosing his depository. The second class is where the deposit is made by the mutual consent of the parties. Besides such deposits of money received by banking or commercial companies, with a view to employing it in their business, a merchant or commercial company frequently deposits with a bank documents, such as deeds or bonds, as security for the payment of a loan.

DEPOSI'TION, in law: testimony of a witness set down in writing. Depositions are taken either by a judge or by a commissioner specially appointed by him for that purpose. The questions to which the depositions are answers are usually put by the legal representatives of the parties to the suit, under the control of the court or commissioner, and the answers are taken down by the clerk of court, or by a clerk specially appointed. If the competency of the questions or the admissibility of the witnesses be ob-

jected to, the objection must be stated to the court or commissioner. The latter may either dispose of the objection at the time, or reserve it for the opinion of the court by which he was appointed. It is a rule in the laws of evidence of all countries that the deposition cannot be read where the witness might be himself produced, because his oral testimony is the best evidence, and secondary evidence is never admissible. Where he is dead, however, or insane, or beyond the jurisdiction of the court, his deposition then becomes the best evidence, and may be read in court.

DEPOSITION OF A CLERGYMAN, in the Established Church of Scotland: act of depriving of the clerical office. The minister of a parish who has been guilty either of immoral and scandalous conduct, or of preaching or otherwise publishing doctrines contrary to the standards of the church to which he has declared his adherence, or of contumaciously setting aside the authority of the Presbyterian church-courts, may be deposed from his office by the church-courts. Thus he is deprived not only of his ecclesiastical dignity, but of the temporalities of his benefice (stat. 1592, c. 115), and the benefice becomes vacant as if he were dead. He may, however, be restored to his position as a minister of the church, by the general assembly, but not to his benefice. Sentence of deposition cannot be pronounced by a presbytery in the absence of the minister, except by authority of the general assembly. For the similar step in the Church of England, see DEPRIVATION OF A CLERGYMAN.

DEPOSITION OF A MINISTER, in churches governed congregationally, Baptist and others: act of terminating a minister's bishopric or pastorate in a local church, with condemnation for some scandalous or grievous offense. The offense must be such as is held to vitiate either his Christian character or the fundamental Christianity of his teaching. Deposition is the act of the church interested; it is done after full trial; involves or may consist in excommunication or withdrawal of Christian fellowship; but cannot vacate the minister's right to salary under a legal contract with the church or parish, unless the deposition be done according to the usage of the body of churches with which the church is specially affiliated. In such grave cases the almost universal usage is that the church shall proceed to this extreme step only with the aid and advice and consenting action of a council of churches which it has especially called to its assistance for trial of the case. See COUNCIL.

DEPOT, n. *dĕ-pō′*, DEPOTS, n. plu. *dĕ-pōz′* [F. *dépôt*, a deposit—from L. *depositus*, laid or put down]: a place where stores are kept; the body of troops in which recruits are trained, and from which men are supplied for vacancies in corps abroad; in the *British army*, since 1872, every battalion, whether at home or abroad, has a depot of two companies: the depots of two battalions constitute the

depot-centre, or sub-district brigade, to which the volunteers and militia of the sub-district are affiliated; and in time of war, the depot would expand into a third battalion. In *merchandising*, depot is a warehouse; an open place or covered shed where goods are laid up. In the *United States*, the name applied to passenger-stations.

DEPRAVE, v. *dĕ-prāv'* [F. *dépraver*—from L. *depravārĕ*, to pervert—from *de*, *prāvus*, crooked, wicked: It. *depravare*]: to make bad or worse; to vitiate; to corrupt. DEPRA'VING, imp. DEPRAVED', pp. *-prāvd'*. ADJ. corrupt; abandoned; vicious. DEPRA'VEDLY, ad. *-vĕd-lĭ* or *-prāvd'lĭ*. DEPRAVATION, n. *dĕp'ră-vā'shŭn* [F.—L.]: the act of corrupting anything or making it bad; the state of being made bad; depravity; in *OE.*, defamation. DEPRAV'ITY, n. *-prăv'ĭ-tĭ*, corruption; wickedness; destitution of moral principles. DEPRA'VEDNESS, n. DEPRA'VER, n. *-vẽr*, one who.—SYN. of 'depravity': corruption; depravation; vitiation; vice; wickedness; degeneracy; contamination; pollution.

DEPRECATE, v. *dĕp'rĕ-kāt* [L. *deprĕcātus*, averted by praying—from *de*, *precor*, I pray, I beg]: to pray or wish that a present evil may be removed, or an expected one averted; to pray against. DEP'RECATING, imp. DEP'RECATED, pp. DEP'RECATOR, n. one who. DEP'RECA'TION, n. *-kā'shŭn* [F.—L.]: a praying against; an entreaty. DEP'RECA'TINGLY, ad. *-lĭ*. DEP'RECA'TIVE, a. *-tĭv*, or DEP'RECA'TORY, a. *-kā'tẽr-ĭ*, tending to avert evil; having the form of a prayer. DEP'RECA'TIVELY, ad. *-lĭ*.

DEPRECIATE, v. *dĕ-prē'shĭ-āt* [mid. L. *depretĭātus*, diminished in price: F. *déprécier*, to undervalue—from mid. L. *depretĭārĕ*, to depreciate—from *de*, *prĕtĭŭm*, a price]: to lessen the price or value of a thing; to decry; to undervalue; to become of less worth. DEPRE'CIATING, imp. DEPRE'CIATED, pp. DEPRE'CIA'TION, n. *-ā'shŭn* [F.—L.]: the act of lessening the value of anything; a falling in value. DEPRE'CIA'TIVE, a. *-ā'tĭv*, or DEPRE'CIA'TORY, a. *ā'tẽr-ĭ*, tending to depreciate; undervaluing. DEPRE'CIA'TOR, n. *-tẽr*, one who.—SYN. of 'depreciate': to traduce; disparage; detract; lower.

DEPREDATE, v. *dĕp'rĕ-dāt* [mid. L. *deprædātus*, plundered thoroughly—from L. *de*, *prædātus*, plundered: It. *depredare*, to pillage, to plunder]: to rob; to plunder; to pillage, to take the property of an enemy; to spoil. DEP'REDATING, imp. DEP'REDATED, pp. DEP'REDA'TOR, n. a robber; a plunderer. DEP'REDA'TION, n. *-dā'shŭn* [F.—L.]: the act of spoiling or pillaging. DEP'REDA'TORY, a. *-tẽr-ĭ*, plundering; spoiling.

DEPRES, *dĕ-prā'*, or DESPRES, *dā-prā'*, JOSQUIN, Dutch musician: b. Hainault abt. 1450; d. Conde 1521, Aug. 27. He is reckoned the greatest of the early contrapuntists, but little is known of his personal history. He composed numerous celebrated masses and songs.

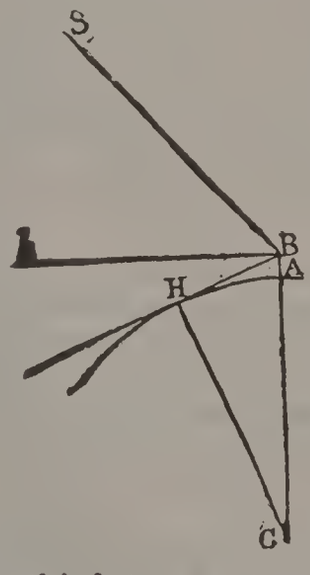
DEPRESS, v. *dĕ-prĕs'* [L. *depressus*, pressed or weighed down—from *de*, *pressus*, pressed]: to press down to a lower

state or position; to lower; to render languid or dull; to deject or make sad; to lower in value. DEPRES'SING, imp. DEPRESSED', pp. *dĕ-prĕst'*. ADJ. in *bot.*, applied to a solid organ having the appearance of being flattened from above downward. DEPRES'SINGLY, ad. *-lĭ*. DEPRES'SION, n. *-prĕsh'ŭn* [F.—L.]: act of depressing; the state of being depressed or lowered; a hollow; the sinking in of a part of a surface; a sinking of the spirits; a low state of trade or business. DEPRES'SIVE, a. *-prĕs'sĭv*, tending to depress. DEPRES'SOR, n. *-ser*, in *anat.*, a muscle which pulls an organ downwards, as the lower jaw, or the lip. ANGLE OF DEPRESSION, in *astron.*, the angle through which a celestial object appears depressed below the horizontal plane, drawn through the eye of a spectator looking down upon the object: see DEPRESSION OF THE HORIZON. DEPRESSANT, n. *dĕ-prĕs'ănt*, remedial agents that repress the circulation of the blood and contractility of the heart.—SYN. of 'depress': to sink; deject; abase; cast down; degrade; humble; discourage; dispirit; sadden; embarrass; cheapen;—of 'depression': abasement; fall; humiliation: reduction; dejection; melancholy; sinking; cavity; despondency.

DEPRES'SION, or DIP, OF THE HORIZON: the angle through which the sea-horizon appears depressed in consequence of the elevation of the spectator.

Let A be a point on the surface of the earth, B a point situated in a vertical line from A. Let BH be a tangent to the earth's surface drawn from B, B*h* a line in the same vertical plane perpendicular to AB. The angle *h*BH is the *true* dip of the horizon to a spectator at B.

The true dip measured in minutes is equal to the distance in nautical miles of the visible horizon. Let C be the centre of curvature of the surface; then, since CHB is a right angle, the angle *h*BH = HCA; and the minutes in this angle are the nautical miles in the arc AH. To find this angle in minutes or nautical miles, the rule is: Multiply the sq. root of the height in ft. by 1.063.



The true dip of the horizon, however, is not exactly the same as its apparent depression. The apparent sea-horizon is raised above its true place by *refraction* through an angle, which varies according to the state of the atmosphere and the relative temperatures of the air and water, the variation ranging from one-third to one twenty-third of the amount of the true pip. The rule commonly employed is to diminish the true dip by about one-fourteenth of its amount, to find the apparent dip.

If S be a star or the sun in the same vertical plane with ABH, and an observation of the altitude above the sea-

horizon be made by means of a sextant from the point B (as from the deck of a vessel), the apparent dip of the horizon must be subtracted from the observed angle, in order to find the altitude of the sun. Owing to the uncertainty of the amount of refraction, the nearest minute to the dip given in the tables is usually taken. The following table gives a sample of the amount of the apparent dip under ordinary state of the atmosphere and equal temperature of air and water. See Raper's *Practice of Navigation.*

Height. Feet.	Dip. m. s.	Height. Feet.	Dip. m. s.
0	0 0	8	2 50
1	1 0	9	3 0
2	1 20	10	3 10
3	1 40	20	4 20
4	2 0	30	5 20
5	2 10	40	6 10
6	2 20	50	7 0
7	2 40	100	9 50

DEPRETER, n. *dĕp'rĕ-tẽr:* plastering done to represent tooled ashlar-work. It is first picked up and floated as for set or stucco, and then small stones are forced on dry from a board.

DEPRETIS, *dā-prā'tēs,* Augustin, Italian statesman: b. Mezzana-Corte-Bottaroni, near Stradella, 1813, Jan. 31; d. there 1887, July 29. He was identified with Italian politics from 1849, when he was made civil governor of Brescia, and in 1861 was sent to Sicily as pro-dictator for Garibaldi. He served in a number of Italian ministries, beginning in 1862 as minister of public works under Ratazzi. Under Ricasoli in 1866–7 he was minister of marine and afterward held the portfolio of finance. In 1876 he was called to form a ministry himself, and while acting as president of the council and minister of finance he instituted many reforms in the government. In 1879 he resigned, and Carioli formed a government, but Depretis was again placed at the head of the council in 1885, and remained there until his death.

DEPRIVA'TION OF A CLER'GYMAN, in the Church of England: act of depriving of the clerical office. This may be either (1) by a sentence declaratory in the proper court, on the ground of attainder or conviction of treason, felony, or any other infamous crime, or of conviction for heresy, infidelity, or gross immorality, or for farming or trading contrary to law; or (2) in pursuance of divers penal statutes, which declare the benefice void for some nonfeasance or neglect, or else some malfeasance or crime, as simony; for maintaining any doctrine in derogation of the king's supremacy, or of the Thirty-nine Articles, or the Book of Common Prayer; for neglecting to read the liturgy and articles in the church, and to declare assent to the same, within two months after induction; for using any other form of prayer than the liturgy of the Church of England; for continued neglect, after order from the bishop, followed by sequestration, to reside on the benefice. In these latter cases, the benefice is void, without

any formal sentence of deprivation (Stephen's *Com.* iii. 37). A bishop may be deprived of his bishopric, but cannot be deposed, as may be done in the case of a Presbyterian clergyman, the character of a bishop, like that of a priest, being held to be indelible. The tribunal by which the bp. of Clogher was deprived in 1822 consisted of the archbishop and the other bishops of the province; and this precedent having been established, would probably be adhered to on any future occasion, notwithstanding that the archbishop alone might have full authority to deprive.—*Cripps's Laws of the Church*, p. 100. See DEPOSITION OF A CLERGYMAN.

DEPRIVE, v. *dĕ-prīv'* [mid. L. *deprīvātus*, dispossessed of an office or dignity—from L. *de*, *prīvo*, I take away, I bereave]: to take away from; to bereave of a thing; to hinder from possessing or enjoying; to divest of a dignity or office. DEPRI'VING, imp. DEPRIVED', pp. *-prīvd'*. DEPRI'VER, n. one who. DEPRI'VABLE, a. *-vă-bl*, that may be deprived. DEPRIVATION, n. *dĕp'rĭ-vā'shŭn*, a taking away; loss of friends or goods; the taking away his living or office from a minister or clergyman.—SYN. of 'deprive': to bereave; strip; despoil; rob; abridge; debar; divest; hinder; prohibit; disqualify; exclude; preclude; forbid.

DE PROFUNDIS, *dē prō-fŭn'dĭs* ('Out of the depths'): first words of Psalm cxxx., which forms a portion of the liturgy of the Rom. Cath. Church, and is sung when the bodies of the dead are committed to the grave. A tender melancholy pervades the psalm, which, however, brightens at the close under the conviction that with God there is 'plenteous redemption.'

DEPTFORD, *dĕt'ford:* town on the s. bank of the Thames, about 4 m. below London Bridge, divided from Greenwich by the river Ravensbourne, a creek of deep water (*depe ford*), formerly fordable at the spot where Deptford Bridge now stands. It contains two parishes, St. Nicholas' and St. Paul's, the latter formed by act of parliament 1727. St. Nicholas' Deptford lies wholly in Kent, but St. Paul's extends into Surrey—the Surrey portion being known as the Manor of Hatcham. The people are engaged largely in the Royal Deptford Victualing Yard, and in extensive private ship-building and engineering establishments. The market-gardens of Deptford are famous. The upper portion of the town is well built, and is a favorite place of residence for persons in business in London. Deptford formerly was a part of the parliamentary borough of Greenwich, was in 1885 raised to the rank of a separate parliamentary borough, returning one member. The ancient Incorporation of the Master and Brethren of the Trinity House of 'Deptford Strond,' founded by Henry VIII., has its hall at Deptford, and also two sets of almshouses. Queen Elizabeth, 1581, visited Drake at Deptford, in the ship in which he 'compassed the world.' In 1698, Peter the Great acquired the art of ship-building in the dock-yard here, residing at the manor

house of Sayes Court, which John Evelyn had previously occupied. Pop. 110,513.

DEPTFORD DOCK-YARD—now ROYAL DEPTFORD VICTUALLING YARD: British naval establishment. It was never concerned as largely in ship-building as in other operations connected with the fitting-out of fleets. Being ill adapted for the large war-ships of the present day, the dock-yard proper was abandoned 1865, and the naval establishment limited to the victualing-yard, an important place, employing several hundred persons as officers, clerks, workmen, and hoymen. This is the chief dépôt for victualling the home and foreign stations, and the marines; also for slops (ready-made clothing) and many of the necessaries for seamen. It is convenient for these purposes, being near the metropolitan markets. For simplicity it used to be called collectively a royal dock-yard; but the ship-building, the store-keeping, and that very miscellaneous process called the provisioning, were the work of different establishments.

DEPTH, *dĕpth* [from DEEP, which see]: the measure of a thing from the surface to the bottom; a deep place; the sea or ocean; the middle, stillest, or inner part; abstruseness; obscurity; unsearchableness; sagacity or penetration; profoundness, as applied to writings or discourses, or to the understanding. DEPTH'LESS, a. wanting depth.

DEPUCH' ISLAND: in the Dampier archipelago, off the n.w. coast of Australia: lat. 20° 38′ s., and long. 117° 44′ e. Though only eight m. in circuit, it is notable for some curious specimens of native sculpture found on it; also because rising with its greenstone rocks to a height of 514 ft. above the sea, it presents a remarkable contrast to the low-lying shore of the adjacent mainland.

DEPUDORATE, v. *dē-pūd'er-āt* [L. *de*, away; *pudor*, shame]: to render void of shame, or shameless.

DEPURATE, v. *dĕp'ū-rāt* [mid. L. *depurātus*, purified—from L. *de*, *pūrus*, pure: F. *dépurer*, to purify]: to free from impurities. DEP'URATING, imp. DEP'URATED, pp. DEP'URA'TION, n. *-rā'shŭn* [F.—L.]: the freeing from impurities; the cleansing of a wound. DEPURANT, a. *dĕp'ū-rănt* [mid. L. *depūrăn'tem*, purifying]: a medicine supposed to be capable of purifying the blood.

DEPUTE, v. *dĕ-pūt'* [F. *députer*—from L. *depŭtārĕ*, to prune, to destine or allot to—from *de*, down; *putārĕ*, to cleanse, to prune]: to allot or appoint a part to represent the whole; to appoint as an agent or substitute to act for another. DEPU'TING, imp. DEPU'TED, pp. DEPUTATION, n. *dĕp'ū-tā'shŭn* [F.—L.]:—*literally*, the parts cut off or allotted to represent the whole; the act of appointing or deputing persons authorized to act for others; a special commission or delegation appointed by a public body. DEP'UTY, n. *-tĭ*, a person appointed to act for another; a lieutenant; a viceroy. The appointment of a deputy does not free the principal from responsibility, since the deputy is not an assignee. It is a general rule, that no judge can

appoint a deputy unless he be authorized to do so in the commission by which he himself is appointed. In the rare cases in which a deputy is empowered to appoint a deputy, the latter is usually called a substitute: see SHERIFF.—SYN. of 'deputy': ambassador; envoy; plenipotentiary; minister; substitute; representative; legate; delegate; envoy; agent; factor.

DEPUTIES, CHAMBER OF, the lower of the two legislative chambers or second house of national parliament in France, Italy, Spain, Portugal, and Rumania. The first French Chamber of Deputies was established under Louis XVII. in 1814. By enactments introduced in 1830, any citizen of 30 years and upward who paid direct contributions to the extent of 500 francs might be elected as a deputy. Originally the chamber was elected for five years, in 1824 it became septennial, and in 1830 it was again limited to five years. In France the chamber consisted of 591 members, elected for four years by universal suffrage. In Italy the members numbered 508; in Portugal 148; in Rumania 183. In Spain the deputies number one to every 50,000 inhabitants.

DEPUTY, a lieutenant or substitute who exercises power which properly belongs to another who has placed him in his stead. The appointment of a deputy does not free the principal from responsibility. A deputy must take an oath of office. His salary is paid by the government. If authorized for the time being to act with full power of his principal, he is called a general deputy, and may act in his own name. Otherwise when acting in a particular and limited matter he is only a special deputy.

DE PUY, *dė pū*, HENRY WALTER; American miscellaneous writer: b. Pompey Hill, Onondaga co., N. Y., 1820; d. 1876, Feb. 2. He constantly contributed political articles to the press; wrote several popular poems, and was the author of *Kossuth and His Generals*, with a brief history of Hungary (1851); *Louis Napoleon and His Times*, with a memoir of the Bonaparte family (1853); *Three Score Years and Beyond* (1873); etc.

DE PUY, WILLIAM HARRISON: American Methodist clergyman: b. Penn Yan, N. Y., 1821, Oct. 31; d. Canaan, Conn., 1901, Sep. 4. He was the editor of the Methodist Year Book 1866–89, and was associate editor of the New York *Christian Advocate* for 25 years. He published: *Compendium of Useful Information* (1878); *The People's Cyclopedia of Useful Knowledge* (1879); *Home and Health and Home Economics* (1880); *The People's Atlas* (1882); *University of Literature* (1896).

DE QUINCEY, *de kwĭn'sĭ*, THOMAS: 1786, Aug. 15—1859, Dec. 8; b. Manchester, England: distinguished writer. His father was a wealthy Manchester merchant, who, dying while his children were yet young, left his widow an estate of £1,600 a year. De Quincey received his first education at home, and was afterward sent to the grammar school of

Bath. He went to the Univ. of Oxford 1803, and remained there till 1808. At the university he made the acquaintance of opium, which was ever afterwards his dread familiar. On leaving college, he went to reside at the Lakes, formed one of the cluster of literary lights which made that region at the time so illustrious, and afterwards so memorable. He left Cumberland 1819, and in 1843 he removed to Scotland, settling with his family at the village of Lasswade, near Edinburgh. He died at Edinburgh.

With the exception of a strange episode of his youth, described in the *Confessions of an Opium-eater*, the heroine of which was, singularly enough, one of the 'waifs of womanhood,' De Quincey's career was almost entirely eventless. He led a lonely and speculative life, and his writings are at once history and autobigraphy. He was perhaps, with the exception of his friend Prof. Wilson, the most brilliant magazine-writer in this century of magazines. Everything that he wrote, putting aside the *Confessions*, *The Logic of Political Economy*, and a novel—which no one seems to have read, or if read, to have remembered, is in the form of articles. Even the *Confessions* themselves were originally published as a series of articles in the *London Magazine*. De Quincey wrote on a great variety of subjects, and in a great variety of styles. He has written articles pervaded by humor of the most curious and novel kind, philosophical and critical articles distinguished by originality and daring of speculation, and articles of the nature of prose-poems, unquestionably the most wonderful things of their kind in English literature. In imaginative grandeur, and music and sweep of sentence, the *Suspiria de Profundis*, and the opium visions that close the *Confessions*, are miracles of impassioned prose. De Quincey's works were collected and republished first in the United States. The edition of De Quincey's works, 16 vols., includes nearly all his writings. See Page's *Life and Writings of De Quincey* (1877); and Masson's *Sketch* (1881).

DERA, *dĕr'a* (a word derived from the Arabic 'der,' a monastery), the name of several towns in British India, the two principal places so designated being Dera Ghazi Khan, capital city of a district of the same name in the province of Punjab, about four miles west from the Indus River, in lat. 30° 4′ N., and lon. 70° 50′ E. It is a British military station, is situated on the Sindhsagar Railroad, and contains many stately religious buildings and mosques. Pop. 23,899; and Dera Ismail Khan, capital city of the government district of Deradschat, in the Punjab, about eight miles west from the Indus, in lat. 31° 50′ N. and lon. 70° 59′ E. It comprises an English and Indian city, in the former of which is a British garrison, two regiments of infantry, one of cavalry, and one battery of artillery. The Indian city is surrounded by a mud wall, and occupied by noble native families. It is a trade depot for Afghanistan. Pop. 21,573.

DERACINATE, v. *dĕ-răs'ĭ-nāt* [F. *déracincr*, to uproot —from *de;* F. *racine*, a root—from mid. L. *radicina*—from L. *radicem*, a root]: in *OE.*, to tear or pluck up by the roots. DERAC'INATING, imp. DERAC'INATED, pp. *-nāt-ĕd.*

DE'RAH: Egyptian measure of length, equivalent to 22·37 inches. Dry goods are sold by a D. measuring 25·50 inches. One-half of a D. is a *kadam*, one-sixth an *abdat*, one twenty-fourth a *kerat*. The D. in use at Constantinople is nearly three times the length of the Egyptian (66·34 inches).

DERAJAT, *dĕr-a-jât':* fluvial portion of Daman (q.v.); a comparatively narrow strip in the Punjab, between the Suliman Mountains and the Indus, and which, when duly irrigated, is singularly fertile. D. is so called from *dera*, a camp, a common element in the names of its towns—Dera Deen Punah, Dera Futti Khan, Dera Ghazee Khan, and Dera Ismail Khan. It is divided into four districts; total area 23,317 sq. m.; pop. (1891) 1,650,380.

Dera Deen Punah, the least considerable of the above towns, has suffered much from physical causes, having, in 1819, been nearly destroyed by an earthquake and by a simultaneous flood from the Suliman Mountains.—Dera Futti Khan is the centre of a district which produces cotton, grain of various kinds, indigo, sugar, and opium; pop. 5,000.—Dera Ghazee Khan occupies, for commercial purposes, a very favorable position—the intersection of the two great routes of the country between n. and s., and between e. and w.; hence it has been recommended as the best site for an annual fair for Sinde, the Punjab, Afghanistan, Beloochistan, and Khorassan. It manufactures cotton, silk, and steel, and has an extensive bazaar. Pop. 22,300.—Dera Ismail Khan is of recent origin, another town of the same name having been swept away by an inundation of the Indus It stands on the thoroughfare already mentioned between n. and s., commanding also two ferries across the river. To this position it is indebted for a thriving trade, and in spring particularly it is crowded by the Lohani Afghans, an enterprising tribe of pastoral pedlers. Pop. 22,000.—Besides the towns already described, D. has Isa Khel, pop. abt. 8,000, and the important commercial town of Leia (q.v.).

DERANGE, v. *dĕ-rānj'* [F. *déranger*—from OF. *des*, for L. *dis*, apart; *ranger*, to set in order; *rang*, a row (see RANGE)]: to put out of its row or order; to disorder; to confuse; to disturb; to embarrass. DERANG'ING, imp. DERANGED', pp. *-rānjd':* ADJ. disordered in mind; crazy. DERANGE'MENT, n. [F.]: a putting out of order; disorder of the intellect; insanity.—SYN. of 'derange': to embarrass; displace; unsettle; disconcert; ruffle, discompose; confuse; disarrange;—of 'derangement'. madness; insanity; confusion; disorder; embarrassment; irregularity; delirium; mania; lunacy; disturbance.

DERAYEH, EL: see DERREYEH, EL.

DERBEND, *dĕr-bĕnd'*, or DERBENT, *dĕr'bĕnt:* town of Russia, cap. of the govt. of Daghestan; on the w.

shore of the Caspian Sea, on the declivity of a branch of the Caucasus, which here approaches very close to the water's edge, and forms a defile known anciently as the *Albaniae Pylae*, now the Pass of Derbend; lat. 42° n., long. 48° 15′ e. D. is built in the form of a parallelogram, about 3 m. in length, and from a quarter to half a mile in breadth. It is surrounded by strong walls of very ancient date, further strengthened at intervals by towers. It came finally into the possession of Russia 1795. Pop. about 18,000.

DERBY, *dâr'bĭ* or *der'bĭ* [instituted by Earl *Derby* 1780]: the principal race at Epsom, generally on the last Wednesday in May: see DERBY DAY. DERBYSHIRE NECK, *dâr'bĭ-shĭr*, goitre, which see. DERBYSHIRE-SPAR, fluoride of calcium, or fluor-spar, which see.

DERBY, *der'bĭ* or *dâr'bĭ:* parliamentary and municipal Haven co., at the junction of the Naugatuck and Housatonic rivers, 9 m. w. of New Haven, and 13 m. n.e. of Bridgeport, on the New York, New Haven & Hartford railroad. In 1893 the towns of Birmingham and Derby were consolidated and incorporated under the latter name. It has abundant water power from the two rivers, and is a manufacturing town of considerable importance. The principal manufactures are brass and iron goods, paper, pins, and spectacles, and at one time the old town had a large West India trade and noted ship-building yards. There are several parks, daily and weekly newspapers, a national bank, and good public and private schools. A bridge across the Naugatuck river connects Derby with the manufacturing town of Ansonia, with which it was formerly connected by incorporation, but the two places were separated in 1889. The Housatonic is navigable to D. for vessels drawing 10 ft. of water. Pop. 7,930.

DERBY, *der'bi* or *dâr'bĭ*: parliamentary and municipal borough and manufacturing town, capital of Derbyshire, England, in the s. part of the county, in the wide and fertile valley of the Derwent—thence navigable to the Trent; at the junction of the main branches of the Midland railway, 132 m. n.n.w. of London, 35 m. n.n.e. of Birmingham. The dwellings are mostly of brick, and the public buildings of stone. The Free Grammar School is one of the oldest English foundations, dating 1162. Here Blackwell, author of the *Sacred Classics*, was a master, and Flamsteed a pupil. The school was removed 1862 from St. Peter's Church-yard to St. Helen's House, the site of the original foundation, and class-rooms have been added. Dr. Darwin, 1783, founded the Philosophical Soc. of D., and wrote most of his works here. D. is well situated for manufacture and trade, being at the s. end of a coal-field, and connected by canals and railways with a great part of

England. It has manufactures of silk, cotton, lace, hosiery, lead, iron, paints, porcelain, jewelry, black marble vases, columns, chimney-pieces, and ornaments of fluor-spar, petrifactions, marble, etc. The staple manufacture is throwing silk, introduced by Mr. Crochet from Italy early in the 18th c.; the silk-mill, with machinery still in use, erected 1718 by John Lombe, being the first of the kind in England. D. has about 25 silk-mills. In 1867 a new cattle-market was opened, and a new corn-exchange, and a handsome market hall was built 1866. Mr. Bass presented the town with a recreation-ground, swimming-baths, a free library, art gallery, and museum buildings. D. was the Roman station *Derventio*, on the e. bank of the river, opposite the town. Roman brass, silver, and gold coins have been found, a Roman pavement, and the foundations of a Roman bridge. D.—called *Northworthige* by the Saxons, and *Deoraby* by the Danes—was given by the Conqueror to William Peverill. D. returns two members to parliament. Pop. (1871) municipal borough, 49,793; (1881) 80,410; parliamentary borough (1871) 61,381; (1881) 77,636; (1891) 94,146; (1901) 105,785.

DERBY, *dĕr'bĭ* or *dâr'bĭ:* titular name of a distinguished family of British nobility, descended from a common family with the Barons Audley or Audleigh, county Stafford. William de Audleigh, 12th c., on exchanging with his cousin, Sir Adam de Audleigh, the manor of Talk, county Stafford, for that of Stanleigh (Stony Lea), county Derby, adopted the latter name, and continued it to all his descendants. The first who assumed the arms now used by the family—viz., 'three stags' heads on a bend'—was Sir William de Stanley, son of William de Stanley, in the reign of Henry III. The first Lord Stanley was created 1456; his eldest son Thomas was created first Earl of Derby 1485.

DERBY, Edward Geoffrey Smith-Stanley, 14th Earl of: 1799–1869, Oct. 23; b. at Knowsley Park, Lancashire. He was educated at Eton and Christ-church, where, 1819, he gained the Latin Verse prize (subject, *Syracuse*). He was elected member of parliament for Stockbridge 1820; in 1825, he married the second daughter of the first Lord Skelmersdale; and in 1826, he represented Preston, but lost his seat 1830, on becoming chief sec. for Ireland under the administration of Earl Grey. A seat was then found for him at Windsor. He took a distinguished part in the debates in favor of the Reform Bill, and signalized his Irish administration by two bold measures—one for national education in Ireland, and another relative to the Irish Church temporalities, which resulted in ten Irish bishoprics being abolished. The grievance of church-rates and first-fruits was also removed, and a graduated tax upon benefices and bishoprics substituted. In 1833, he became sec. of state for the colonies, and in the same year carried the bill for emancipating slaves in the W. Indies, and providing a compensation of twenty millions of pounds to the planters. In 1834, alarmed by the success of Mr. Ward's motion for appropriating the surplus of the

Irish Church temporalities to secular purposes, Lord Stanley seceded from the Grey ministry, carrying with him Sir James Graham, the Duke of Richmond, and the Earl of Ripon. He ever afterward adhered to the Conservative party, although in 1834, upon the dismissal of the Melbourne ministry by William IV., he declined to join the administration of Sir Robert Peel. After acting with the opposition for seven years, he accepted the colonial seals in the Peel administration 1841, and held them for four years. In 1844, Sep., he resigned his seat for n. Lancashire for which he had sat since 1832, and was called to the upper house in his father's barony of Stanley of Bickerstaffe. In 1845, Dec., when Sir Robert Peel determined to repeal the corn laws, he retired from the cabinet. In 1846, he put himself at the head of the protectionist opposition, which, headed in the commons by Lord George Bentinck and Mr. Disraeli, waged a stout but ineffectual opposition to the free-trade measures of Sir Robert Peel. He was now regarded as the leader of the great Conservative party. In 1851, on the death of his father, he succeeded to the earldom. In 1852, Feb., on the resignation of Lord John Russell, he was intrusted with the formation of an administration, which was displaced in Dec. following by a hostile vote of the house of commons condemnatory of the budget of his chancellor of the exchequer, Mr. Disraeli. On the death of the Duke of Wellington 1852, he was elected chancellor of the Univ. of Oxford. In 1858, Feb., when the Palmertson govt. resigned on the rejection of the Conspiracy Bill, he again became first lord of the treasury. At the meeting of parliament in the following year, Derby's government brought forward a measure of parliamentary reform. A hostile amendment having been moved by Lord John Russell, and carried, he dissolved parliament, and appealed to the country. When the new house of commons re-assembled, 1859, June, a vote of want of confidence was carried against his government, and he resigned. He returned to power in 1866, and, in conjunction with Mr. Disraeli, passed the reform measure of 1867: see Reform. In 1868, he resigned the premiership in favor of Mr. Disraeli. His last speech in parliament was made (1869) in opposition to the disestablishment of the Irish Church. At his death he was succeeded in the earldom by his son, Edward Henry Smith-Stanley (see Stanley). As a debater, Earl Derby stood in the very first rank. His power of invective was almost unequalled, and his vehement contentions with O'Connell on the repeal of the Union and the Irish Church did much to diminish the influence of the Irish agitator. He was tall, of commanding gesture, and his voice, in elevated passages of declamation, rang with power and effect. Derby gave the leisure of his latter years to translating Homer's *Iliad*, in blank verse (2 vols. 1864).

DERBY, George Horatio, pen name 'John Phœnix': American humorist: b. Dedham, Mass., 1823, April 3;d. New York 1861, May 15. He was graduated at West

Point (1846), and served in the army during the Mexican war (1846-7). He wrote under the name 'John Phœnix' a series of sketches and burlesques, entitled '*Phœnixiana* (1855); and *The Squibob Papers* (1859).

DERBY, Orville Adelbert: American geologist: b. Kelloggsville, N. Y., 1851, July 23. He graduated from Cornell University in 1870, made trips to Brazil in 1870 and 1871; and was instructor at Cornell in 1873-5. In 1875 he became a member of the Brazilian geological commission, and has since been engaged in geological work in Brazil, being at one time curator of the geological department of the National Museum, and holding the position of chief of the geographical and geological survey of São Paulo since 1886. He has published a number of valuable papers on the geology and geography of Brazil, and is considered one of the first authorities on the subject.

DERBY DAY, in England: second day of the horse-races, the Wednesday of the 'Summer Meeting,' which takes place at Epsom in Surrey, usually at the end of May, but sometimes early in June. Upon this day, the most important on the list, and that on which the best horses run, the famous Derby stakes, instituted by the Earl of Derby, 1780, and which consist of 50 sovereigns each, are contended for. When the first Derby was run for, there were only 36 subscribers at 50 guineas each (with £25 forfeit in case of non-starters); but the number of subscribers is now so large, that the value of the stakes sometimes amounts to more than £6,000. The Derby Day is the great English holiday. To be present at Epsom on that occasion, London empties itself, and proceeds to the Downs by modes of locomotion the most heterogeneous. For hours, a continuous stream of carriages, gigs, dog-carts, vans, and vehicles of every description, moves tumultuously along the road to Epsom. Shopkeepers on that day shut up their shops, the benches of parliament are deserted, one-half of the aristocracy appear on the ground, people of every condition arrive in countless numbers from all districts; and huge trains arrive every few minutes at the station, bringing their thousands, until the entire Downs are covered with a vast moving mass. So great is the demand for conveyances on this day, that scarcely a horse can be had either in London or within 40 miles of it. At the Derby 1861, the course, a mile and a half in length, was gone over in 2 minutes 43 seconds—the swiftest running, by two seconds, yet known on that course.

DER'BŸITES: see Plymouth Brethren.

DERBYSHIRE, *dĕr'bĭ-shĕr* or *dâr'-:* inland co. of England, between Yorkshire on the n. and Leicestershire on the s.; triangular in form; the greatest length from n. to s. 56 m.; greatest breadth, 34; 1,030 sq. miles. The n.w. is occupied by the s. end of the Pennine chain, called the High Peak or Derbyshire Highlands. This tract forms the watershed between the Trent and Mersey, and is not surpassed in England for rugged and romantic scenery;

abounding in precipices, faults, rocking-stones, caverns—one of which is 2,700 ft. long—and streams that lose themselves for a time among the fissures of the limestone hills. The Peak is 1,880 ft. high; Kinderscout 1,981 ft. From the Peak tract, a range runs s.; another runs 60 m. s.s.e. Other ranges intersect parts of the county. To the south, Derbyshire sinks into a flat or gently undulating tract of new red sandstone, with some spots of magnesian limestone and coal, and beds of red marl and gypsum. The chief rivers are the Trent—dividing Derbyshire from Staffordshire for 10 m., then crossing the south of the county and passing into Nottingham—and its tributaries, the Derwent and the Dove, both of which rise in the region of the Peak, and flow s.east. Warm mineral springs are at Buxton and Matlock, and intermitting springs at Barmoor and Tideswell. Derbyshire is celebrated for metals and minerals—iron, lead, zinc, manganese, copper, coal, fuller's earth, mineral caoutchouc and mineral oil, gypsum, pipeclay and chert for potteries, marble, fluor-spar, and alabaster for ornaments, etc. Derbyshire has six canals, and is intersected by many branches of the Midland railway. In the n., the climate is cool and moist, with fogs, and often frosty in summer. Derbyshire is more a manufacturing and mining than an agricultural county. The best soils in the south are red, marly, fertile loams. There are many woods and coppices. The chief crops are wheat, barley, and oats. Derbyshire has much permanent pasture, large dairies, and sheep-pasturage in the Peak district. There are manufactures of cotton, silk, worsted, metallic goods, porcelain, and marble and spar ornaments. The chief towns are Derby, Ashbourne, Bakewell, Buxton, Chapel-le-Frith, Chesterfield, Belper, and Wirksworth. There are in the county remains of so-called Druid circles, barrows, cromlechs, British and Roman roads, Roman baths, and a Roman altar at Haddon Hall. There are also ecclesiastical and monastic remains. Repton Church crypt dates before 874. Hardwick Hall contains some furniture of Elizabeth's time, and some embroidery said to have been done by Mary Queen of Scots. Near Bakewell is Chatsworth, the magnificent seat of the Duke of Devonshire. Arkwright built his first mill at Cromford 1771. Pop. (1901) 604,577.

DERCETIS, n. *dĕr'sĕ-tĭs* [L. *Dercĕtis*, a Syrian sea-goddess]: in *geol.*, a ganoid eel-like fish of the chalk formation.

DERCETO: see DAGON.

DERECSKE, *dā-rāch'kā:* town of Hungary, 12 m. s. of Debreczin; in the vicinity of several small lakes, from which, in the summer-time, considerable soda is obtained by evaporation. In one of the lakes, small but very beautiful pearls are found. Pop. 8,272.

DEREHAM, EAST, *dēr'am:* town in the middle of the county of Norfolk, England, 16 m. w.n.w. of Norwich. Its streets are wide, well lighted, and well paved. The

church, cruciform, with a tower, contains the remains and monument of Cowper the poet. Dereham has manufactures of agricultural machines, and in the highly cultivated country around are many gardens and orchards. Here Withburga, daughter of King Anna, founded a nunnery in the 7th c., which was burned by the Danes, and afterward refounded. Withburga was buried in her nunnery 654, but her remains were stolen thence by the monks of Ely in 974. Pop. 5,524.

DERELICT, a. *dĕr'ĕ-lĭkt* [L. *derĕlic'tus*, forsaken—from *de*, *relictus*, left behind]: forsaken entirely; left; abandoned: N. in *law*, goods thrown away or abandoned by the owner; a tract of land left dry by the sea, and fit for cultivation or use; a ship abandoned at sea. DER'ELIC'TION, n. *-lĭk'shŭn*, complete abandonment; the act of leaving or forsaking; state of being abandoned; desertion.

DER'ELICT, in law: anything forsaken or left, or wilfully cast away.

That a ship which has been wrecked may be deemed derelict, it is necessary that the master and crew shall have abandoned her, without hope of recovery. The mere quitting of a ship for the purpose of procuring assistance from the shore, or other temporary cause, with the intention of returning to her again, is not an abandonment. When true abandonment or dereliction has occurred, the first comers are entitled to take temporary possession of the ship, and to claim salvage, either from the owners or others having right to wrecks unclaimed by the owners.

The principle upon which Salvage (q.v.) is given on wrecks and derelict is, that a person who by his labor preserves goods which the owner or those intrusted with the care of them have either abandoned in distress at sea, or are unable to protect and secure, is entitled to retain the possession of the goods until proper compensation is made to him for his trouble. Where the parties cannot agree on this sum, and are unwilling to adopt the decision of the justices the amount is usually ascertained by a jury. Till the question is decided, the goods remain in the custody of the salvor, or of the receiver for his behoof. No claim for salvage is due where the owner, or those in his employment, are at hand on the coast, and in a condition to save and protect his property. If any one set of persons have taken possession of a derelict, and are endeavoring to bring it into port and save it, another set have no right to interfere with them and become participators in the salvage; unless it appears that the first in possession would not have been able to effect the rescue of the property without the aid of the others (Abbot, p. 490). This rule applies to govt. officers, even where the property saved belongs to the government. The original salvors cannot be dispossessed without reasonable cause.

DE RESZKE, JEAN: a Polish singer; b. 1852, Jan. 14, in Warsaw; made his début in Venice in 1874; came to the United States with the Metropolitan Opera-House

Company, and has since sung in Wagner roles in New York and London. His brother, EDWARD, b. 1855, Dec. 23, is a popular bass singer of dramatic roles, and a member of the Metropolitan Opera-House Company.

DERG, LOUGH, *loch dĕrch* (signifying the *red lake*): lake in Ireland, largest lake expansion of the river Shannon, between Tipperary on the s.e., and Galway and Clare on the n.w.; 24 m. long from n.e. to s.w., 2 to 6 m. broad, 10 to 20 ft. deep at the upper, and 50 to 80 ft. at the lower end. Its surface is about 100 ft. above the sea. It contains several islands.

DERG, LOUGH: lake in Ireland, in the s. of Donegal county, on the borders of Tyrone. It is 3 m. long, and 2½ m. wide, has many small isles and rocks, and wild dreary shores, and is surrounded by mica-slate hills 700 to 1,200 ft. high. Saint's Isle contains the remains of a priory, founded about 600, and is the original seat of St. Patrick's Purgatory. But the place of penance has for some centuries been on Station Isle—less than an acre in extent, and with two chapels—which is now the most celebrated place of pilgrimage in Ireland, 10,000 to 15,000 persons flocking to it annually, from June 1 to Aug 15, for prayer, fasting and vigils.

DERHAM, *dĕr'am*, WILLIAM: English philosopher and divine: b. Stoughton, near Worcester, 1657, Nov. 26; d. Upminster, Essex, 1735, April 5. He became in 1685 vicar of Wargrave, in Berkshire, and in 1689 rector of Upminster in Essex, where he spent the remainder of his life. Though small in stature, distorted, and of ungainly appearance, he had a highly gifted mind, and not only possessed the universal esteem of his parishioners, but acquired considerable reputation in various departments of literature. His best known works are: *Physico-Theology; Astro-Theology;* and *Christo-Theology.*

DERIDE, v. *dĕ-rīd'* [F. *dérider*—from L. *deridērĕ*, to laugh to scorn—from *de*, *ridērĕ*, to laugh: It. *deridere*]: to laugh at in contempt; to mock. DERI'DING, imp. DERI'DED, pp. DERI'DER, n. one who. DERI'DINGLY, ad. *-lĭ*. DERI'SION, n. *-rĭzh'ŭn* [F. *dérision*—from L. *derisĭōnem*—from *derīsus*, mockery, scorn]: the act of laughing at in contempt; mockery; ridicule; scorn. DERI'SIVE, a. *-rī'sĭv*, mocking; ridiculing. DERI'SIVELY, ad. *-lĭ*. DERI'SIVENESS, n.—SYN. of 'deride': to ridicule; taunt; banter; insult; laugh at; rally; scoff at;—of 'derision': ridicule; scorn; mockery; insult.

DERIVA'TION, in Medicine: method of curing disease, whose theory was formerly that the *materies morbi*, or matter of the disease was drained away through some channel established for it by artificial means, as when a blister is applied over an inflamed lung, or a discharge from the bowels established in a case of dropsy. Many of the practices formerly founded on this theory have been found useful in experience, and are well established in modern medicine.

DERIVE, v. *dĕ-rīv'* [F. *dériver*, to turn off, as a stream—from L. *derivārĕ*, to draw off, to divert—from *de*, *rīvus;* a stream: It. *derivare*]: to draw from, as from a regular course or channel; to receive, as from a source or origin; to deduce, as from a root or primitive word; to trace. DERI'VING, imp. DERIVED', pp. *-rīvd'*. DERI'VABLE, a. *-rī'vă-bl*, that may be derived. DERI'VABLY, ad. *-vă-blĭ*. DERIVATION, n. *dĕr'ĭ-vā'shŭn* [F.—L.]: the act of drawing or receiving from a source; that which is derived or deduced; the tracing of a word from its root (see ETYMOLOGY). DERIVATIVE, a. *dĕ-rĭv'ă-tĭv*, taken or formed from another; secondary: N. a word formed from another word, or which takes its origin from a root; not fundamental. DERIV'ATIVELY, ad. *-lĭ*. DERIV'ATIVENESS, n.—SYN. of 'derive': to trace; infer; draw; flow; proceed.

DERM, n. *dĕrm*, or DERMA, n. *dĕr'mă*, and DERMIS, n. *dĕr'mĭs* [Gr. *derma*, skin, *dermătos*, of skin: F. *derme*]: the true skin; the integument which covers animal bodies (see SKIN). DER'MAL, a. *-măl*, pertaining to the skin. DER'MATOL'OGY, n. *-mă-tŏl'ŏ-jĭ* [Gr. *logos*, discourse]: science of the skin and its diseases (see SKIN). DER'MATOL'OGIST, n. one who. DERMOID, a. *dĕr'moyd*, or DER'MATOID, a. *-mă-toyd* [Gr. *eidos*, likeness]: resembling the skin. DERMALGIA, n. *dĕr-măl'jĭ-a* [Gr. *algeō*, I feel pain]: neuralgia of the skin. DERMO-SKELETON, the hard integument which covers many animals, and affords protection to their soft parts, making its appearance as a leathery membrane, or as shell, crust, scales, or scutes. DERMANEURAL, a. *dĕr'ma-nūr-al*, or DERMONEURAL, a. *dĕr'mō-* [Gr. *neuron*, a nerve]: term applied to the upper row of spines in the back of a fish, from their connection with the skin, and their relation to that surface of the body on which the nervous system is placed. *Note.*—DERMA or DERMIS is the true skin, sentient and having a vascular texture; *epidermis* or *cuticle* is the non-vascular tissue covering the dermis.

DERMAL SENSATION. See SENSATION.

DERMAPTERA, n. plu. *dĕr-măp'tĕr-a* [Gr. *derma*, skin; *pteron*, a wing]: an order of insects separated from the *Orthoptera* of Latreille, and restricted by Kirby to the earwigs: see EARWIG.

DERMATITIS: inflammation of the skin may be due to a variety of causes, some due to special parasites, animal or vegetal, such as erysipelas; others to specific poisons, such as that of poison ivy; others again to the action of cold, as in chilblains, or to heat as in sunburn; others to local injury such as bruise; X-ray 'burns' are to be regarded as instances of traumatic dermatitis. The treatment of dermatitis varies according to the cause, but in general soothing applications, such as lead and opium wash, zinc ointment, etc., are called for. See the various titles, CHILBLAINS, ERYSIPELAS, POISON IVY, SUNBURN, etc.

DERMATOPHYTES, *dĕr-măt'o-fīts* [Gr. *derma*, the skin; *phyton*, a growth or plant:] vegetable growths, chiefly of the lowest of Cryptogamia (q.v.), inhabiting the cuticle

or epidermis, and giving rise to some forms of skin-disease, as Favus (q.v.), Pityriasis (q.v.), Ringworm (q.v.), etc.

DERMESTES, *dĕr-mĕs'tēz:* genus of coleopterous insects, the type of the family *Dermestidæ*, having antennæ shorter than the thorax, their three terminal joints forming an ovate compressed club. Their larvæ feed mostly on dry and decaying animal matter, and are very voracious, committing great ravages among furs, collections of natural history, etc. *D. lardarius* is the well-known Bacon Beetle, the larva of which is so often destructive to bacon and other dried meats, and to cheese. The perfect insect is about a quarter of an inch in length, and of a dull black color, the base of each wing-cover ash-colored with three black spots. The larva is of a long shape, tapering towards the tail, dark-brown above, white beneath, with long hairs, and furnished with two horny hooks on the last segment. The larva of *D. murinus* is common in the dried carcasses of vermin nailed up on doors by gamekeepers; that of *D. vulpinus* abounds among cargoes of hides brought from warm climates; that of *D. paniceus* in long-kept stores of ship-biscuits.

Use is sometimes made of the larvæ of species of Dermestes for procuring well-cleaned skeletons of birds and other small animals; the animal is first soaked in water, to get all the blood out; then dried, to suit it to the taste of the larvæ, which are placed with it in a covered box; and in a short time their work is very neatly and completely done, much better than by ants.

DERMOBRANCHIATA, n. plu. *dĕr-mō-brang-kĭ-ā'ta* [Gr. *derma*, the skin; *branchia*, gills]: family of gasteropods or snails, the external branchiæ or gills of which occur in the form of thin membranous plates, tufts, or filaments; called also *Nudibranchiata* (q.v.). Dermobran'chus, n. *-kŭs*, genus of mollusks, the branchiæ or respiratory organs of which consist of ramified skin.

DERMOID CYST, n. *dĕr'mŏyd sĭst* [Gr. *derma*, skin]: hollow tumor of congenital origin, composed of tissues derived from the epiblast, or outside layer of the Embryo (q.v.). It is found in the ovary and the testicle, also at the outer angle of the orbit, and over the root of the nose. The great peculiarity of a dermoid cyst is in its contents. Its walls, which are true skin, may contain anything that has its origin in the epiblast, and it is not uncommon to find, almost as it were, the remnants of another being. On opening such a cyst it may be found to contain hair and sebaceous material; in another may be teeth and nails, or possibly all of these. It is supposed that during development of the fœtus some of the epiblastic cells went astray, and became entangled in tissues differing in character from themselves, and, after lying dormant, resumed their activity and produced the tissue for which nature intended them. Nothing is ever found in a dermoid cyst but what is of epiblastic structure; and should bone, muscle, or cartilage be found, such a cyst would be

classed no longer as a dermoid cyst, but as a teratoma, because such materials are derived from the mesoblast, or middle layer of the embryo. See DEVELOPMENT OF THE EMBRYO.

DERMOPTEROUS FISHES, *dėr-mŏp'ter-ŭs* [Gr., skin-finned fishes]: an order in Owen's classification, named from the cutaneous vertical fins, in which the rays are extremely soft and delicate, or altogether imperceptible,and further characterized by the want of pectoral and ventral fins. Among dermopterous fishes are lampreys, the lancelet, etc,

DERMORHYNCHI, n. plu. *dĕr-mō-rĭng'kī* [Gr. *derma*, skin; *rungkos*, snout]: birds having a skinny bill; the duck tribe.

DERMOSCLERITES, n. plu. *dėr-mŏs'klĕr-ī'tēz* [Gr. *derma*, skin; *sklēros*, hard]: masses of spicules found in the tissues of some of the Alcyonaria.

DERN, n. *dern* [AS. *dearn*, secret, hidden (see DEARN)]: in *OE.*, secret; sad; melancholy. DERNLY, ad. *dėrn'lĭ*, secretly; sadly.

DERNA, or DERNAH, *dėr'na:* town of Tripoli, n. Africa, at the mouth of a ravine a mile from the Mediterranean; about lat. 33° 30′ n., long. 22° 30′ e. Built on both sides of the ravine, it has regular streets, which are far from cleanly, although a copious stream of pure water flows through several of them. The houses are low, and have a mean appearance, but they are surrounded by fine gardens and orange-groves. The harbor of Derna is insecure, and its prosperity, formerly considerable, has greatly declined. Pop. 6,000.

DERNBURG, *dĕrn-bôrg*, FRIEDRICH: German journalist and descriptive writer; b. Mentz 1833, Oct. 3. After a university course he rapidly acquired eminence in journalism and politics, and was a well-known correspondent at the Chicago Columbian Exposition. *From the White City* (1893), a series of World's Fair sketches; *In the Bonds of Guilt* (1894); and *The Over Proud* (1889), are typical specimens of his fact and fiction.

DERNIER, n. *dėr'nĭ-ėr* [F.]: last; final. DERNIER RESSORT, n. *-rĕ-sŏrt'*, the last resource or expedient.

DEROGATE, v. *dĕr'ō-gāt* [L. *derogātus*, taken away, detracted from—from *de*, *rogātus*, asked: It. *derogare:* F. *déroger*]: to lessen by taking away a part; to detract; to disparage; in *OE.*, to act beneath one's station; to degenerate: ADJ. in *OE.*, degraded. DER'OGATING, imp. DER'OGATED, pp. DER'OGA'TION, n. *gā'shŭn* [F.—L.]: the act of destroying or taking away the value or effect of anything, or of limiting its extent; disparagement. DER'OGATELY, ad. *-lĭ*, in *OE.*, in a manner to lessen reputation. DEROGATORY, a. *dĕ-rŏg'ă-tėr-ĭ*, that lessens the extent, effect, or value; detracting; humiliating. DEROG'ATORILY, ad, *-lĭ*. DEROG'ATORINESS, n. the quality of being derogatory.

DERREYEH, El, or Derayeh, *ĕl de-rī′ĕh*, or Dereyeeyah: town of Nedjed, Central Arabia: in lat. 25° 15′ n., long, 46° 30′ e. It is near the centre of Nedjed, 430 m. n.e. from Mecca, and stands in a valley abt. half a mile wide, filling its whole breadth, and is fortified. Pop. usually stated abt. 15,000. It was formerly the capital of the country of the Wahabees, but was captured after a siege of seven months, and almost destroyed by Ibrahim Pasha 1819. See Wahabis.

DERRIAS, n. *dĕr′rĭ-as* [an Abyssinian word. Hemprech writes it *Karrai*]: a baboon, *Cynocephalus Hamadryas*, found in Arabia and Abyssinia. The Arabic name is Robah or Robba. Though not now found in Egypt, it is sculptured on the monuments of that country.

DERRICK: this is the simplest form of a machine for hoisting. The name is derived from a family by that title who adapted its form from the early English style of gallows, and the name has now come into common use. In form the derrick is like the letter V, one side being fixed immovably by guy ropes, the other hinged to the bottom of this fixed upright, so that it can be raised or lowered at will. This movable jib is somewhat shorter than the upright and the whole apparatus is on a platform which can turn laterally in a circle. Through the top of this jib is run a pulley block, a rope passing through this and down to the base of the upright, where it is wound about a cylinder, or winch. This, when revolved by hand, or other power winds up the rope or cable, thus raising the weight attached to the other end of the rope. The jib is lowered or raised to get the proper angle for picking up the article to be lifted. This simple form of hoister is in constant use by builders in constructing modern high buildings. By its use, heavy or light weights can be quickly lifted from the ground to the top of even 30-story structures. Derricks are commonly made of wooden spars, unless the work to be done is very heavy or the jib exceedingly long. In such case, a tubular iron spar is used. Hoisting engines of such power and facility of control are now made that they enable the operator to move the jib up or down or sideways easily and quickly. The 'stiff-leg' derrick has its upright firmly braced by timbers running from the top to the ground, but this form is not common except in stone quarries or in some work where the derrick is stationary. The more common form is the guy-rope derrick, where strong wire cables extend from the top of the upright to the ground. With this arrangement, the hoisting machine can be moved and located in a fresh position easily. Derricks that will lift and swing to position weights of from 5 to 10 tons are now made in this country. In the contemplated work on the Panama Canal, derricks capable of moving 100-ton loads of stone are to be built, with a radius of over 100 feet for the jib.

DERRY: see Londonderry.

DERVISH, or Dervis, or Dervise, n. *dĕr′vĭs* [Persian, *derwesch* or *darvish*, poor]: Mohammedan priest, or monk of

great austerity, and professing poverty; corresponding to the Arabic *Fakir* (q.v.). The dervishes are divided into many different brotherhoods and orders. They live mostly in well-endowed convents, called Tekkije or Changah, and are under a chief with the title of a Sheik, i.e., 'elder.' Some of the monks are married, and allowed to live out of the monastery, but must sleep there some nights weekly. Their devotional exercises consist in meetings for worship, prayers, religious dances, and mortifications. As the convent does not provide them with clothing, they are obliged to work more or less.

It is not known when these religious orders took their rise. From the earliest times, pious persons in the East have held it to be meritorious to renounce domestic and social life, and to devote their thoughts in poverty and retirements to the contemplation of God. In this sense, poverty is recommended by Mohammed in the Koran. Tradition refers the origin of these orders to the earliest times of Islam, and reports the caliphs Abubekr and Ali as founders of such brotherhoods; but it is probable that they arose later. Many Mohammedan princes and Turkish sultans have held dervishes in high respect, and bestowed rich endowments on their establishments; and they are still in high veneration with the people. The orders are generally named after their founders, and the best known are the *Bestamis*, established A.D. 874; *Kadris*, 1165; *Rufaji*, 1182; *Mevelevis*, 1273; *Nakshibendis*, 1319; *Bektashis*, 1357; *Rushenis*, 1533; *Shemsiss*, 1601; and *Jemalis*, 1750. The kadris are commonly known in the West as 'the howling dervishes,' from the excited chant of their religious services; the 'dancing dervishes' are the Mevelevis.

DERWENT, *dĕr′went:* one of the principal rivers of Tasmania, issues from Lake St. Clare, in the centre of the island; flows tortuously s.e.; and enters Storm Bay, in D'Entrecasteaux Channel, by an estuary four m. wide. Up to Hobart-Town, the Derwent is navigable for ships of any burden.

DERWENTWATER, *dĕr′wĕnt-waw-tĕr*, or Keswick Lake, *kĕz′wĭk* or *kĕz′ĭk:* oval sheet of water in the south of Cumberland, England; one of the most beautiful lakes of that county. It stretches s. from Keswick, is 3 m. long by 1½ broad, 72 ft. deep, and 222 ft. above the sea. Its banks are rocky and abrupt, and behind them rise rocky hills, one of which, the Cat Bells, is 1,448 ft. high; another, Lowdore, has a waterfall of 100 ft. This lake is an enlargement of the Derwent river, which runs through it in its course to the Irish Sea, at Workington. The lake has several wooded isles, besides a remarkable floating isle—a mass of earthy matter six ft. thick, and varying in size in different years from an acre to a few perches, covered with vegetation, and full of air-bubbles, which buoy it on the surface of the water. Derwentwater abounds in trout, pike, perch, and eels.

DERWENTWATER, James, Earl of: 1688-1716, Feb. 24: one of the leaders in the rebellion of 1715, and the last

earl of Derwentwater: descendant of an ancient Northumberland family named Radcliffe. He was educated in France, and on the death of his father 1705, Derwentwater, then in his 17th year, returned to the seat of his ancestors at Dilston, Northumberland, and assumed the paternal titles and estates. On the eve of the insurrection, at the close of 1714 warrants were issued on suspicion against several gentlemen in the north of England, and one, among others, against the earl of Derwentwater; but having been previously warned, he fled from Dilston, and found refuge in the cottage of one of his dependents. He soon afterward collected a few retainers, and placed himself at their head, under the impression that the entire body of the Jacobites either had risen, or were about to rise. From this period the history of the earl of Derwentwater becomes the history of the rebellion of 1715, which ended in the disastrous encounter at Preston, on which occasion Derwentwater conducted himself with the utmost heroism, but with the most of the rebel leaders, was taken prisoner, and conveyed to the Tower of London. Having been impeached of high treason at the opening of parliament, he was carried before the house of lords 1716, Feb. 9, and, requesting time to prepare an answer to his accusation, was remitted till Feb. 19, when, being taken for trial to Westminster Hall, he pleaded guilty, and threw himself upon the mercy of the king. His appeal was unavailing, and he was condemned to suffer. Every possible effort was made in vain by the relations and friends of Derwentwater to obtain a pardon. He was beheaded on Tower Hill. His youth, his invariable amiability of temper, his rank, and his bravery, excited great sympathy.

DERZAWIN, *dĕr'zâ'vĭn*, Gabriel Romanowicz: 1743 July 3—1816, July 6; b. Kasan: Russian lyric poet. He studied at the gymnasium of his native city, and in 1762 entered the army as a private soldier. His talents and education soon procured him promotion. The empress Catharine highly esteemed him; and in 1791 appointed him sec. of state, in 1800 imperial treasurer, and in 1802 minister of justice. After holding the last office one year, he retired on a pension, and devoted the remainder of his life wholly to the muses. Derzawin is a thoroughly original poet. He excells in loftiness of idea, purity of sentiment, and rich vigor of language; in fact, the latter quality at times manifests itself in an Oriental extravagance of imagery which the colder fancy of the west fails to appreciate. Derzawin's noblest, as well as his most popular ode, is his *Address to the Deity*. It has been translated into English, German, and other European languages. His collected works were first published at St. Petersburg in 5 vols. (1810-15), and have been often reprinted.

DESAGUADERO, *dā-sâ-gwâ-thā'rō:* table-land lying between the Oriental and Occidental Cordilleras of the Andes; 400 m. long, 30 to 80 m. wide; extending from

the peak of Potosi to that of Vilcañota; one-third within the territory of Peru, the remainder in Bolivia; area, 150,000 sq. m. It has an average elevation of 13,340 ft. above sea level; is watered by the great Lake Titicaca, 12,846 ft. above sea-level, Lake Aullagas, Desaguadero river, which connects them, and a smaller lake; contains the rich silver mines of Corocoro, the gold of the Nevada de Illimini, tin of Oruro, valuable mountain veins of copper and other minerals, and thermal springs at Urimiri and Mochacamarca, and is inhabited chiefly by Incas and Aymaras; and yields an abundance of costly guanaco, alpaca, lama, and vicuña wool.

DESAGUADERO, *dā-sâ-gwâ-thā′rō:* lake in Araucania (q.v.), S. America; 35 m. in length, average breadth five m.; from it flows the Osorno to the Pacific.

DESAGUADERO: river of the Argentine Confederation. It separates the depts. of San Luis and Mendoza; but is merely a winter torrent, dried up in summer.

DESAGUADERO: river of Bolivia—the only stream of any magnitude wholly within its borders—issues from Lake Titicaca, and, after a course of 190 m., loses itself in the land-locked lake of Aullagas, near the town of Oruro. It is, without exception, the loftiest considerable stream on either continent; for the elevation of its source, not greatly exceeding that of its mouth, is 12,846 ft., or nearly 2½ miles.

DESAIX DE VEYGOUX, *dĕh-zā′ dĕh vā-gô′*, Louis Charles Antoine: 1768, Aug. 17—1800, June 14; b. St. Hilaire-d'Ayat, in Auvergne: general of the first French republic. After studying at the military school of Effiat, he was appointed 1792 aide-de-camp to Prince Victor de Broglie, then at the head of the army of the Rhine. Here Desaix de Veygoux distinguished himself by bravery. In 1796, Moreau, having obtained the command of the army of the Rhine, made Desaix de Veygoux his lieutenant, and employed him in the most difficult and dangerous missions. In Moreau's (q.v.) famous retreat through the Black Forest during this year, Desaix de Veygoux, who commanded the left wing of the army of the Rhine, increased his already great reputation. The French by this retreat had now retired within the Rhine, retaining on the right bank only the fort of Kehl, which Desaix de Veygoux was commissioned to defend. The fort was in ruins, and could not be well repaired before the approach of the Austrians; nevertheless, behind this imperfect defense Desaix de Veygoux resisted the Austrian army for more than two months, only capitulating 1797, Jan., when his ammunition was spent. His greatest achievement, however, was the conquest of Upper Egypt, 1799, after an eight months' campaign. He was incredibly fertile in resources, and had the power of winning and restraining the people whom he had conquered; his own soldiers used to compare him to Bayard, while the inhabitants named him *The Just Sultan.* Desaix de Veygoux

returned from Egypt in time to take part in the battle of Marengo, 1800, in which he was killed by a musket bullet. His body was placed—after being embalmed—in the convent of Mount St. Bernard. A statue has been raised in his honor in the Place Dauphine, in Paris.

DE SANCTIS, *dā sânk'tēs*, Luigi: 1808, Dec. 31—1869, Dec. 31; b. Italy: reformer. He received a classical and theological education, became a Rom. Cath. priest, and held a professorship of theology in Rome several years. In 1847, he renounced the Roman faith and became one of the leaders in the Protestant movement, established the Prot. periodical *Eco della Verita*, and published many treatises against the teachings and conduct of the Rom. Cath. Church, which were translated into several languages and widely distributed, and in 1868, was appointed prof. of theology in the Waldensian Seminary in Florence.

DÉSAUGIERS, *dā-zo-zhē-ā*, Marc Antoine Madeleine: French song writer and dramatist, b. Frejus, 1772, Nov. 17, d. Paris, 1827, Aug. 9. His life till 1797 was full of adventure; he was at one time a prisoner of the revolted blacks in San Domingo and in momentary fear of death. Going on the stage in Paris in 1805, his parody of the opera *Danaids* (*The Little Danaids*) was acted for 300 consecutive nights. His vaudevilles were remarkably successful. As a light song writer he is second only, if indeed second, to Béranger. Many of his songs will live long; such as *The Consolations of Old Age, The Picture of New Year's, The Market, Sunday Pleasures, The Palais Royal.*

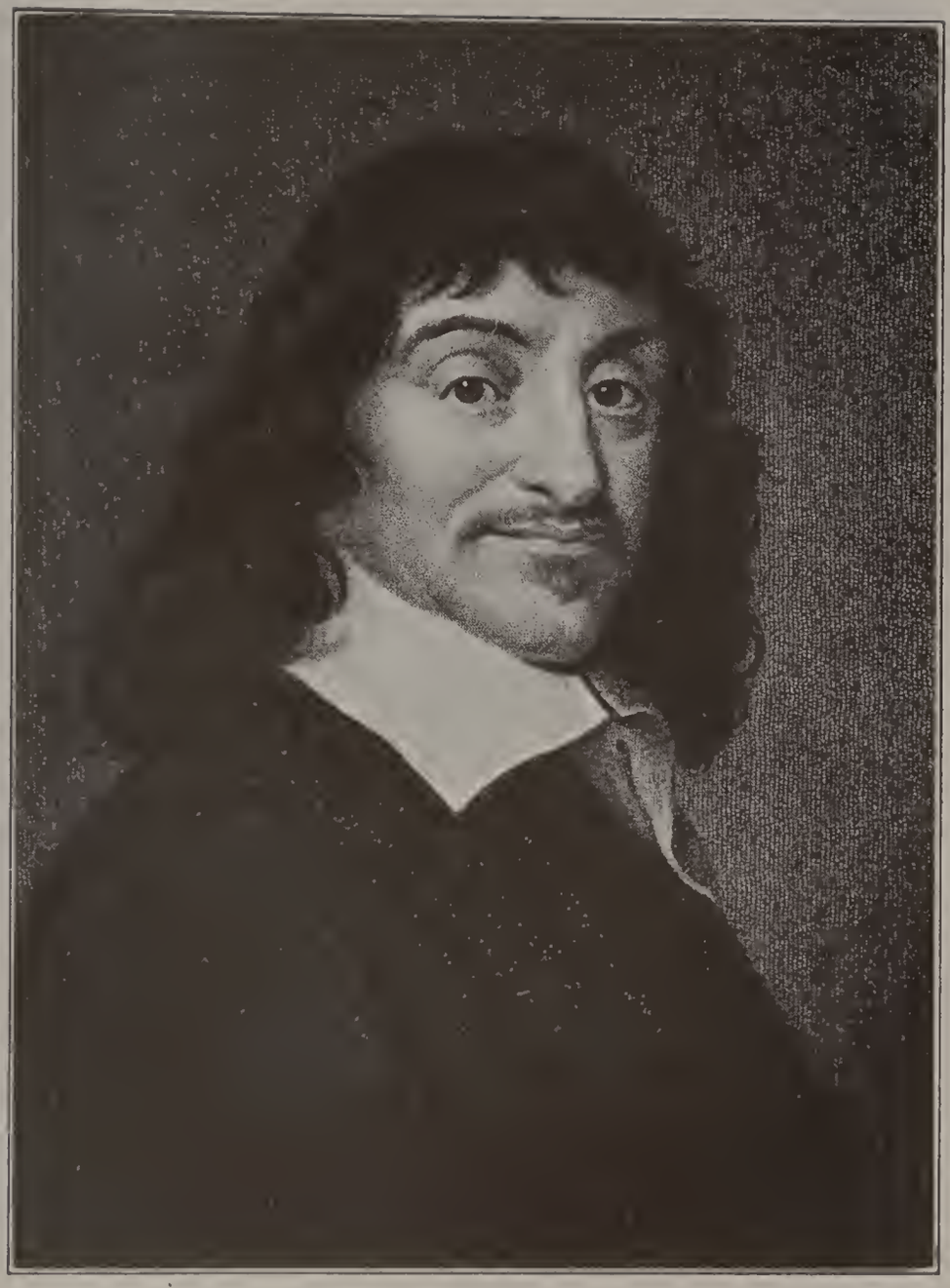
DESAULT, *dé-zō*, Pierre Joseph, French surgeon: b. Magny-Vernais, 1744, Feb. 6; d. Paris, 1795, June 1. He was designed for the church, early studied mathematics and philosophy, and was led by his inclination to the surgical profession; in consequence of which he entered the military hospital at Béfort, where his diligence and talent for observation supplied the defects of a suitable instruction, and his situation was favorable for obtaining a knowledge of the treatment of wounds from fire-arms, in which department he afterwards rose to great eminence. He went to Paris in 1764, and was one of the numerous scholars of the celebrated Petit. Two years afterwards he became a lecturer, and though his delivery was bad, he soon became celebrated by introducing a new method of teaching anatomy. While lecturing on the parts of the human body, he treated of the diseases incident to each. After having been several years principal surgeon of the hospital De la Charité, where he increased his reputation by introducing new methods of treatment, or by improving and simplifying those already in use, he was put at the head of the great Hôtel-Dieu in Paris, in 1788. Here he founded a surgical school, in which have been educated many of the most eminent surgeons of Europe. His principal merits were, that he brought accuracy and method into the study of surgery; improved the treat-

ment of fractured bones, by adopting improved bandages; first introduced into France the clinical method of instruction in surgery; and infused into his scholars a generous attachment to their profession. He was distinguished for the skill and boldness with which he performed operations. He died while attending upon the son of Louis XVI., in the Temple. Desault wrote only two small treatises; but the *Journal de Chirurgie*, in which his scholars published his lectures delivered in the Hôtel-Dieu, and the *Œuvres Chirurgicales*, edited by Bichat under Desault's name, contain his whole system.

DES BARRES, *dā bâr'*, Joseph Frederick Wallet: 1772-1824, Oct. 24; b. England: hydrographer. He graduated at the Royal Milit. College, Woolwich, 1756, was commissioned a lieut. in the army, and sent to America for service. Immediately after his arrival he recruited a corps of field artillery in Penn and Md., and commanded it till a battalion of regulars was sent over from England. He achieved his first distinction as an engineer in the expedition against and siege of Louisburg 1758; was an aide to General Wolfe at the siege of Quebec, and while reporting received the mortally wounded commander in his arms; made a chart of St. Lawrence river for milit. uses; and had charge of the engineering operations for the defense of Quebec and the reduction of several French strongholds 1760; and was engineer-in-chief of the expedition that recaptured Newfoundland, 1762. He prepared plans for a series of milit. posts throughout the American colonies, surveyed the coast of Nova Scotia 1763-73, made charts of the n. Atlantic coast, was appointed gov. of Cape Breton and milit. commander of Prince Edward Island 1784, and lieut. gov. and commander-in-chief of the island province, 1804. He published his charts of the n. Atlantic coast. *The Atlantic Neptune*, in 2 vols. (London 1777), and *Cape Breton* (London 1804).

DESCANT, n. *dĕs'kănt* [OF. *descant* or *deschant*—from OF. *des* for L. *dis*, apart; *canto*, I sing: Sp. *discantar*, to chant, to quaver upon a note: It. *discantare*, to disenchant]: a song or tune composed in parts (sometimes *discant*); the counterpoint or melody which the singer (taking the upper part) sang extempore to the tenor or bass; in *modern music*, the part for the voices of females or boys, i.e. treble or soprano. The word denotes also a discussion; a discourse; a series of comments: V. *dĕ-skănt'*, to sing in parts: to discourse; to remark or comment on freely. Descan'ting, imp. Descan'ted, pp. Descan'ter, n. one who.

DESCARTES, *da-kârt'*, Rene (Latinized Renatus Cartesius): 1596, Mar. 31—1650, Feb. 11; b. La Haye in Touraine, France: metaphysician. He was sent at the age of eight years to the Jesuit College at La Flèche, where he soon became distinguished for keenness of intellect, and made great progress in languages, mathematics, and as-



DESCARTES.

tronomy. It was not long, however, before he became dissatisfied with the doctrines and method of scholasticism, and felt it impossible to acquiesce in what had hitherto been regarded as *knowledge*. The first thing that he did after leaving college, as we are informed in his treatise on Method, was to abandon books, and endeavor to efface from his mind all that he had hitherto been taught, that it might be free to receive the impressions of truth, whencesoever they should come. In pursuance of his plan, he resolved to travel, and soon entered the army as a volunteer, serving successively in Holland and Bavaria. As, however, the life of a soldier contributed little to his main object, he quitted the army 1621; and after making journeys in different directions he at last retired to Holland, where he prepared most of his works, attracted many disciples, and at the same time became involved in several learned controversies, especially with the theologians. Though he loved independence, yet in 1649 he accepted an invitation to Sweden, addressed to him by Queen Christina, who desired his learned intercourse and instruction. His willingness to leave Holland was occasioned partly by his anxiety to escape from the hostility of his enemies. Only a few months after his arrival at the court of Queen Christina, he died. Sixteen years later, his body was brought to Paris, and buried in the church of St. Genevieve-du-Mont.

The grand object toward which Descartes directed his endeavors, was the attainment of a firm philosophical conviction. The way whereby he sought to attain this end, is explained in the Discourse on Method (*Discours de la Méthode*, 1637). This small, but extremely interesting and important treatise, contains a history of the inner life of the author, tracing the progress of his mental development from its commencement to the point where it resulted in his resolution to hold nothing for true until he had ascertained the grounds of certitude. The author also, in the same treatise, explains the practical rules whereby he resolved to be guided while in this state of *suspended belief*, and by the observance of which he hoped to arrive at *absolute certainty*, if, indeed, it were at all attainable. The results of his inquiries, so conducted, he exhibited more particularly in *Meditationes de Primâ Philosophiâ* (Amst. 1641), and *Principia Philosophiæ* (Amst. 1644). In the former of these treatises, the independence of his thinking is strikingly brought out by his commencing his Meditations with the expressions of doubt with regard to all that had thitherto borne the name of knowledge. After examining thoroughly, as he thought, the grounds of certitude in the various departments of knowledge, he found one, and only one proposition that seemed to him to stand the test, and of which the truth could not possibly be doubted: that proposition was, that he existed, which he inferred from the fact of his possessing consciousness. He could not doubt that he felt and thought, and therefore he could not doubt that *he*, the

feeler, the thinker, existed. This relation between consciousness and existence he expressed bythe memorable words: *Cogito ergo sum*. Instead, however, of making the above proposition the foundation of his philosophy, by which he would have been led into a direction similar to that of Kant or Fichte, he employed it only so far as to ascertain from it the criterion of certitude—viz., that whatever is *clearly and distinctly thought, must be true*. Among these clear and distinct thoughts, he soon recognized the idea of God as the absolutely Perfect Being. This idea, he reasoned, could not be formed in our minds by ourselves, for the imperfect can never originate the perfect; it must be *connate*, i. e., part of the original structure of our understanding, and implanted there by the Perfect Being himself. Hence, from the existence of the idea of perfection, Descartes inferred the existence of God as the originator of it; he inferred it also from the mere *nature of the idea* because the idea of perfection involves existence. But if God exist, then we have a guarantee of the previously determined ground of certitude, for God the Perfect Being cannot deceive, and therefore whatever our consciousness clearly testifies, may be implicitly believed.

The most general fundamental principle of the philosophical system of Descartes is the essential difference between spirit and matter—between the thinking and the extended substances—a difference so great, according to Descartes, that they can exert no influence upon each other. Hence, to account for the correspondence between the material and spiritual phenomena, he was obliged to have recourse to a constant co-operation (*concursus*) on the part of God; a doctrine which gave rise subsequently to the system called Occasionalism (q.v.), the principle of which was, that body and mind do not really affect each other, God being always the true cause of the apparent or occasional influence of one on the other. This doctrine received its complete development in the pre-established harmony of Leibnitz: see LEIBNITZ.

Descartes did not confine his attentions to mental philosophy, but devoted himself systematically to the explanation of the properties of the bodies composing the material universe. In this department, his reforms amounted to a revolution, though many of his explanations of physical phenomena are purely *a priori*, and certainly absurd. His corpuscular philosophy—in which he endeavored to explain all the appearances of the material world simply by the motion of the ultimate particles of bodies—was a great advance on the system held till that time, according to which special qualities and powers were assumed to account for every phenomenon. It was in mathematics, however, that Descartes achieved the greatest and most lasting results; and, indeed, his mathematical discoveries procured among his contemporaries, for his many wild philosophical views, a greater importance than they in themselves are entitled to. It was Descartes who

first recognized the true meaning of the negative roots of equations; and to him is due the theorem, called by his name, that an equation may have as many positive roots as there are changes of sign in passing from term to term, and as many negative roots as there are continuations of sign, and not more of either kind. He gave a new and ingenious solution of equations of the fourth degree; and first introduced *exponents*, and thereby laid the foundation for calculating with *powers*. He showed, moreover, how to draw *tangents* and *normals* at every point of a geometrical curve, with the exception of mechanical or transcendental curves; and what perhaps was his best work, he showed how to express the nature and the properties of every curve, by an equation between two variable co-ordinates; thus, in fact, originating *Analytical Geometry*, which has led to the brightest discoveries. Descartes was less happy in his cosmological exercitations, in which he attempted to explain the movements of the heavenly bodies by *vortices* (*tourbillons*), consisting in the currents of the ether which he supposed to fill the universe; a theory which not only then, but even after the discoveries of Newton, made great commotion, and found many adherents, but has long been consigned to oblivion. Descartes' most important writings have appeared in the English translations of Veitch and Torrey. Consult Millet, *Descartes, Sa vie, ses travaux, et ses decouvertes* (2 vols. 1871). See CARTESIANISM.

DESCEND, v. *dĕ-sĕnd'* [F. *descendre*—from L. *descen'dĕrĕ*, to descend—from *de*, *scando*, I climb: It. *discendere*]: to move from a higher to a lower place; to go downward, as a hill; to fall or come down; to invade; to come suddenly; to proceed or pass from, as from father to son; to stoop, as to wrong. DESCEN'DING, imp.: ADJ. coming down. DESCEN'DED, pp. DESCEN'DANT, n. any one proceeding from an ancestor; offspring (see HEIR: CONSANGUINITY: etc.: SUCCESSION). DESCEN'DENT, a. [L. *descen'dens* or *descenden'tem*, descending]: sinking; proceeding from an ancestor; descending or falling. DESCEN'DIBLE, a. *-dĭ-bl*, that may be descended; that may descend from an ancestor to an heir. DESCEN'DIBIL'ITY, n. *-bĭl'ĭ-tĭ*, the capability of being transmitted. DESCEN'SION, n. *-sĕn'-shŭn* [F.—L.]: the act of going downward; a falling; declension; degradation. DESCEN'SIONAL, a. pertaining to. DESCEN'SIVE, a. *-sĭv*, tending to descend. DESCENT, n. *dĕ-sĕnt'* [OF. *descente*, a sudden fall]: act of descending; progress downward; slope; declivity; a hostile invasion from sea; birth; lineage; passing from an ancestor to an heir. DESCENDING-LETTER, in *printing*, a letter that descends below the line, as *f*, *g*, *j*, *p*, *q*, *y*.—SYN. of 'descent': assault; invasion; attack; lineage; extraction; birth; degradation; incursion; derivation; descendants; issue.

DESCENT', LINE OF SWIFTEST: line along which a body falling through the action of gravity, passes most quickly from one point to another. It is proved that, when one point is not directly over the other, the line of swiftest descent is an arc of a cycloid (q.v.).

DESCENT OF MAN: believed, according to man's intuitions from the beginning, to be in some way a divine lineage; declared by Jesus Christ to be that of an offspring of the living and eternal God as Father; asserted in recent years by profound and accurate observers of the facts of animal life and investigators of the laws of matter, to be a descent which is in reality an ascent through an indefinitely extended line of animal forms. This last assertion of physical science, when it fits to itself the wings of metaphysical speculation, at times denies or obscures man's divine lineage—thus tending to reduce man to an animal term and to exclude God; but it is in fact, when confined within the limits of purely physical science, a hypothesis which neither affirms nor denies man's derivation from God—leaving that question to be decided by evidence in other spheres of investigation. As a part of what is known by the general name of the Evolutionary hypothesis, it numbers doubtless among its great company of adherents many who stoutly believe that humanity is traceable in its origin, to God. The evolutionary view of the descent of man is here presented in one of its fundamental forms—the Darwinian: see Darwin's *Descent of Man* (2d ed. Lond. 1875). Other forms, in which, with the observation of facts, is mingled more of metaphysical speculation, may be found in Huxley's *Man's Place in Nature* (Lond. 1864), and Hæckel's *Anthropogenie* (*Evolution of Man*) (trans. 1879); also Herbert Spencer's voluminous writings.

Before attempting to prosecute the inquiry into the evolutionary hypothesis as to the descent of man, a considerable amount of preparatory study is needed. The reader must bring to the task (1) some knowledge of the general progress of the sciences; (2) some acquaintance with the history and progress of biology, and of the main facts of morphology, physiology, and distribution; (3) a knowledge of the necessity for some theory of the origin of these biological phenomena, and an understanding of the nature of the evidence for and against each of the two rival theories; (4) he must be in possession of the facts respecting the antiquity of man. (For information and reference on these heads, see DARWINIAN THEORY: MAN, ANTIQUITY OF: DEVELOPMENT OF THE EMBRYO: SPECIES.)

Long before the publication of Darwin's *Origin of Species*, the evolutionary hypothesis had been maintained by Lamarck and others. Since that time it has been strongly upheld by numerous naturalists, but by none, so fully and carefully as by Darwin.

The objects of Darwin's work are, 'to consider, firstly, whether man, like every other species, is descended from some pre-existing form; secondly, the manner of his development; and thirdly, the value of the differences between the so-called races of man.'

1. Man is constructed on the same type as other mammals; his bones, muscles, nerves, blood-vessels, and viscera can be compared with theirs; even in his brain every fold and fissure can be compared with that of the orang; and it has been anatomically demonstrated that in

the structure of the brain, and of all other parts of the body, man differs less from the higher apes, than these do from the lower Primates. The physiological resemblance is, if possible, even more complete: man is liable to receive the diseases of animals, and communicate his to them; and this proves their close similarity in blood and tissues. Monkeys suffer from the same diseases, exhibit the same peculiarities of taste, and are infested by closely allied parasites. The process of reproduction, too, closely corresponds in all its details; the difference between the sexes is completely analogous; even the age of maturity is by no means so widely different as might appear, for the orang is not adult until 10 or 15 years old.

The development of man agrees thoroughly with that of other mammals, and exhibits the most complete resemblance with that of the higher apes (see DEVELOPMENT OF THE EMBRYO).

Rudimentary organs are peculiarly numerous in the human body. Many muscles characteristic of the lower animals are occasionally, or constantly, present in the human body in this state; the muscles for twitching the skin furnish good instances of this. The superficial muscles of the scalp, and the numerous muscles of the ear, belong to the same system, and in rare instances are functional. The blunt point projecting from the inwardly folded margin of the ear, is probably homologous with the tip of the erect and pointed ear of lower animals. Other examples are the nictitating membrane, the scanty development of hair, the vermiform appendix of the cœcum, and even the wisdom teeth. A certain foramen occasionally present in the humerus of man, and much more frequently in the humerus of animals, existed much more commonly in prehistoric times; so, too, in skulls and other characters the ancient races may be judged to stand nearer the brute. The coccyx of man and the higher apes is a true tail, which during development projects beyond the legs, and occasionally persists during adult life. In all cases it is furnished with an extensor and other muscles, and contains a continuation of the spinal cord.

2. *Manner of Development.*—The variability of man, familiar to us in features only, is no less great in every other respect; dimension, proportion, form, and structure, both internal and external, all alike vary to an unexpected degree. Thus, 558 muscular variations have been observed in 36 bodies, of which one possessed 25 distinct abnormalities, and none was completely normal.

The variability of mental faculties notorious in man, is represented in animals—as each dog or monkey shows—and the inheritance of mental peculiarities is as evident as that of physical ones, for man and beast alike.

Variability depends to some extent upon external conditions, largely, also, upon use and disuse of parts, and other circumstances (see DARWINIAN THEORY, *Laws of Variation*). Arrested development may occur, leading to the reduction or suppression of certain parts, or long lost

characters may frequently appear through reversion, as in the case of a human subject which abnormally resembled certain apes in no less than seven of his muscles. Correlated variations also take place, and others which must provisionally be termed spontaneous.

Man, like other animals, tends to increase with extreme rapidity; his rate of increase is, however, checked by the difficulty of gaining subsistence, by disease, war, infanticide, and the like.

Seeing, then, that man varies like the lower animals, and tends to increase beyond the means of subsistence; seeing, too, that in course of his incessant migration he must have been exposed to the most diversified conditions, he and his early progenitors must have been exposed to a struggle for existence, and consequently to the rigid law of natural selection, which would tend to preserve advantageous variations of intellectual and social faculties, as well as of bodily structure. Commencing with the latter, we find the hands of the *Quadrumana* of similar type to our own, but far less perfectly adapted for diversified uses, though admirably so for climbing. As some ancient Primate became less arboreal, it would needs become more strictly quadrupedal, like a baboon, or more bipedal. For many actions it is evident that the anterior members should be spared from rougher uses and left free, and this would necessitate firmer standing on the feet, which accordingly have become flat, and lost most of their power of prehension. Hence, we can see how it would have been advantageous to the progenitors of man to have become more and more erect, and the higher apes in fact show various intermediate stages between the quadrupedal and the bipedal type. This change of posture would render necessary endless changes of structures, besides those of the four limbs; the pelvis having to be broadened, the spine doubly curved, and the head fixed in an altered position. As stones and clubs became substituted for the teeth in fighting, the jaws and canines, with the jaw muscles and their bony attachments, would become reduced, and the adult skull would resemble more and more that of existing man. As the mental faculties developed, the brain would become larger, and this increase in weight would affect the size and shape of the spinal column and skull. The coating of hair, too, would diminish, probably chiefly through sexual selection, though other reasons are not wanting. The rudimentary character of the tail in man and the higher apes may be largely ascribed to disuse; the friction, too, of the sitting posture would not be without effect, as is evidenced by the extremely short and callous tail of *Macacus brunneus*, and its total abortion in the allied species *M. ecaudatus*.

Besides the acquirement of new characters by sexual selection, changes might be produced also by those unknown agencies which occasionally induce strongly marked variations, not necessarily of physiological importance, on our domestic animals.

Judging from the habits of savages, and of the majority of the quadrumana, primeval man and his progenitors probably lived in society; and favorable variations would thus act and react upon the individuals and the society. Social life would be immensely favored by the comparative weakness and defenselessness of man and his progenitors; and his social and intellectual qualities, even in their lowest state, would more than compensate for these disadvantages. Even the lowest races thus maintain themselves against climate or wild beasts, while in some warm continents or islands, like Australia or Borneo, no special danger exists.

Comparison of the Mental Powers of Man and the Lower Animals.—The immense difference between the mental powers of the highest ape and the lowest savage has now to be accounted for. Between the highest men of the highest races and the lowest savages, there exist the finest gradations, and no one denies that they might pass and be developed into each other. Similarly, between one of the lowest fishes, as a lamprey or a lancelet, and one of the highest apes, there is a much wider interval in mental power than that between an ape and man; yet this is filled by numberless gradations. Any fundamental difference in the merely mental faculty between man and the lower animals has not been clearly defined; consequently, numberless gradations are readily conceivable.

As man possesses the same senses as the lower animals, his fundamental intuitions (if all these be conceded to originate solely from the senses) must be the same. Some instincts (see INSTINCT), too, he has in common, as well as all the emotions. Terror, suspicion, courage and timidity, rage and revenge, love and jealousy, love of approbation and pride, shame, humor, and magnanimity, all are possessed by the higher animals. Nor are the more intellectual emotions and faculties absent: excitement and ennui, wonder and curiosity are readily observed in animals; while imitation, attention, memory, imagination, and even a power of reasoning within certain lines, are evinced; as innumerable anecdotes bear witness. Some traces of high intellectual powers are present; a dog has by some been judged to have powers of abstraction, of forming general conceptions; it certainly retains its mental individuality, and may conceivably possess self-consciousness in some insipient form. And it must be remembered, 'how little can the hard-worked wife of a degraded Australian savage, who uses very few abstract words, and cannot count above four, exert her self-consciousness, or reflect on the nature of her own existence.'

The faculty of language is justly considered one of the chief distinctions between man and the lower animals. Yet even here there are gradations (see PHILOLOGY); and the Evolution of Language by Natural Selection is now well known. That the sense of beauty, in its elementary forms, is present in animals, is deemed probable from their sexual selection and habits.

There is evidence that numerous races of man are as destitute of the idea of religion as of words to express it; while, on the other hand, the dog regards his master with a rever-

ent, submissive, yet hopeful love, not easily distinguishable in kind from the religious emotions of humanity. The belief in spiritual agencies naturally follows from other mental powers.

It is the moral sense or conscience which probably affords the best and highest distinction between man and the lower animals; and its origin is accounted for by Darwin on the view, elaborately expounded and supported in chap. iv., 'that any animal whatever, endowed with well-marked social instincts, the parental and filial affections being here included, would inevitably acquire a moral sense or conscience, as soon as its intellectual powers had become as well, or nearly as well developed as in man.'

Development of the Intellectual and Moral Faculties during Primeval and Civilized Times.—Under this head are discussed, the advancement of the intellectual powers through Natural Selection, and their increase and modification by imitation, reason, and experience; the evolution of the social and moral faculties, at first strictly limited to the same tribe, and chiefly stimulated by such external agencies as natural selection, or praise and blame, but increasing in extent and in comp'exity, and reaching an internal sanction. The action of natural selection in preserving and advancing favorable variations among savage tribes, and its action upon civilized nations, which all are held to have arisen from barbarism, are also examined in detail.

On the Affinities and Genealogy of Man.—Man holds no more than sub-ordinal rank among the *Primates*, in the Natural System of Classification, which is a genealogical one (see ZOOLOGY: DARWINIAN THEORY): and is most closely related to the anthropomorphous apes, themselves a highly specialized sub-group of the *Catarrhini*, or Old World monkeys. To this stock, therefore, it is inferred, man's early progenitors must have belonged. But we must not suppose either that the anthropomorphous progenitor of man was any existing ape, nor that the more remote ancestor of the whole Simian stock, including man, was identical with, or even closely resembled any existing ape or monkey. The great break in the organic chain between man and his nearest allies, which cannot be bridged over by any known extinct or living species, though apparently a very serious objection, is not really of much weight to those who, for general reasons (see DARWINIAN THEORY), believe in the general principle of evolution. For such breaks, and physically far more striking ones, exist between the orang and its allies, between the elephant, the horse, or the ornithorhynchus, and other mammals; and may be considered to depend merely on the number of related forms which have become extinct; while the absence of their fossil remains is explained by the imperfection of the geological record, which, however, is being continually opened more fully to our inspection, thus supplying the missing links. The lower stages or the genealogy of man must be left for the student of vertebrate morphology in general.

On the Races of Man.—Accepting the ordinary anthropological data (see ETHNOLOGY), Darwin discusses the value of

the differences between races from the classificatory point of view, and how they have originated. The question whether mankind consists of one or several species is debated, and shown to be a matter of comparative indifference, since the distinctness of racial type is demonstrated on one hand, and their unity of origin on the other. On the whole, the term sub-species is preferred. The extinction of old races, and the formation of new, are fully considered.

Sexual Selection in animals is very fully discussed; receiving no less than eleven chapters.

The secondary sexual characters of man are then described. The greater size, strength, courage, pugnacity and energy of man, as compared with women, seem to have been acquired chiefly through the contests of the males for the possession of the females; while his greater intellectual vigor would be due rather to natural selection. Men acquired beards as a sexual ornament, and women, for the same reason, became comparatively denuded of hair, and so with other characters. In the last chapter the whole argument is recapitulated and summarized; and the monumental work concludes with a brief indication of the applications of the principle of sexual selection to the welfare and progress of society, and with the reflection, that as man has already risen to the very summit of the organic scale, he may 'hope for a still higher destiny in the distant future.'

In criticism of this hypothesis, it is alleged that this learned and brilliant advocacy, while instructively rich in scientific facts before undiscovered or unregarded, is also dependent at certain important points, on probability and conjecture. It is forcible in its showing of man's bodily relationship to the other animals; and by its presentation of that anciently known, never denied fact, it sets that fact as a strong witness for evolution in the department of man's physical organism; though even here evolution cannot yet be strictly deemed more than a hypothesis expectant of further verification. Regarding man's merely intellectual evolution, its dependence on conjecture is held to weaken its force, though it is not without some considerations worthy of respectful study. It is in its assertion of the evolution of man's conscience and whole moral nature from a merely animal basis, that it will fail with a large class of candid minds until it can bring to them some thing more than the assertions of a merely physical scientist in a realm beyond the physical—assertions all whose force must depend on their conceding his primal assumption, actual though undeclared, that there is no realm to be considered other than the physical.

The Darwinian hypothesis has been productive of many beneficent results. It has stimulated science to an accurate and thorough investigation of the facts of nature; it has brought an epoch in thought; it has compelled the advocates of many time-honored systems to a re-adjustment of those systems in a clearer light and a more balanced philosophy. See SPECIES.

DESCRIBE, v. *dĕ-skrīb′* [L. *descrībĕrĕ*, to represent by drawing—from *de*, fully; *scrībo*, I write: It. *descrivere*]: to represent by drawing; to draw; to delineate; to represent in words or by signs; to show by marks or figures. DESCRI′BING, imp. DESCRIBED′, pp. *-skrībd′*. DESCRI′BABLE, a. *-bă-bl*, that may be described. DESCRI′BER, n. one who. DESCRIP′TION, n. *-skrĭp′shŭn* [F. *description*—from L. *de*, *scriptus*, written]: a representation in words; a delineation by marks or signs; a sort or class to which certain particulars or qualities are applicable. DESCRIP′TIVE, a. *-tĭv*, tending to describe or represent. DESCRIP′TIVELY, ad. *-lĭ*. DESCRIP′TIVENESS, n. the state of being descriptive.—SYN. of 'describe': to depict; characterize; represent; relate; recount; name; narrate; express; explain; portray; trace out; sketch;—of 'description': narrative; narration; detail; explanation; representation; account; definition; recital; report; relation; delineation; cast; sort; turn; sketch.

DESCROIZILLES, *dā-krwâ-zēl*, FRANCOIS ANTOINE HENRI, French chemist; b. Dieppe 1751, June 11; d. 1825, Paris, April 14. He studied chemistry at Paris under Rouelle, and thereafter became professor at Rouen. He especially devoted himself to the technical applications of the science. Berthollet had hardly discovered bleaching by chlorine, when Descroizilles tried it at his works at Lescure-lez-Rouen, and found that it succeeded. He collected the chlorine in water containing chalk, and thus made a step at a very early period in the direction of bleaching-powder. In the course of his operations he contrived different pieces of apparatus for the rapid valuation of commercial products. Thus his alkalimetre for the estimation of alkalies by Vauquelin's method, his apparatus for estimating vinegar (acetimetre), and for bleaching liquid (Berthollimetre), are among the earliest contributions to volumetric analysis. He also contrived a still for the estimation of alcohol in wine. He published a great many researches, especially on technical chemistry. He was the first to show that alum is a double salt.

DESCRY, v. *dĕ-skrī′* [OF. *descrire* for *descrivre*, to describe: F. *décrire*—from L. *descrībĕrĕ*, to delineate, to describe—from *de*, *scrībo*, I write]: to make out; to detect at a distance; to espy; to discover anything concealed: N. in *OE.*, discovery. DESCRY′ING, imp. DESCRIED′, pp. *-skrīd′*. DESCRI′ER, n. one who. *Note.*—DESCRY is really a doublet of *describe*, though usually given as another form of *decry*, and derived from OF. *descrier*, now *décrier*, to cry down—from *de*, *crier*, to cry, thus making the literal sense, 'to make an outcry on discovering what one has been on the watch for.'—SYN. of 'descry': to discover; detect; discern; see; behold; reveal; recognize.

DESECRATE, v. *dĕs′ĕ-krāt* [L. *desecrātus*, declared as sacred, consecrated, and later desecrated—from *de*, away, not; *sacrārĕ*, to make sacred—from *sacer*, sacred]: to profane anything sacred; to divert from a sacred purpose; to

divest of a sacred office. DES'ECRATING, imp. DES'ECRATED, pp. DES'ECRATER, n. one who. DES'ECRA'TION, n. *-krā'shŭn*, the profaning of anything sacred.

DESERET: see UTAH.

DESERT, n. *dĕz'ėrt* [F. *dėsert*, solitary—from L. *desertus*, solitary, waste—from *de*, *sertus*, joined, connected: It. *diserto*]: a wilderness; a solitude; a vast sandy plain; an uninhabited place. ADJ. wild; waste; solitary: DESERT FLORA, such plants as are characteristic of arid regions; in general marked by structures adapted to check transpiration of water, such as reduced leaf-surface, absence of leaves, thickened epidermis, hairy or waxy coverings, stomata ('breathing apparatus') in sunken pits, the entrances to which may or may not be protected by hairs, perennial underground parts such as bulbs, tubers, rhizomes; and annual plants which flourish during the wet season, where such occurs, and, like the tops of many of the perennial herbaceous species, die during the dry season. On the other hand water-absorbing organs are often highly developed; the root-systems are not only large but the root-hairs are exceedingly numerous. Storage organs other than underground parts are common, as in many plants with fleshy leaves and in the thick stems of cacti. In regions of less and less rainfall the vegetation becomes more and more monotonous and restricted to the most resistant forms. DESERT, v. *dĕ-zėrt'*, to leave entirely; to forsake; to abandon; to quit with the view of not returning; to run away. DESERT'ING, imp. DESERT'ED, pp. DESERT'ER, n. a soldier or sailor who runs away from the service, thus deserting his flag; in war he is punishable by death or otherwise as a court martial may order; in peace the punishment usually is not severe. DESER'TION, n. *-shŭn* [F.—L.]: the act of abandoning; the act of leaving with the intention of not returning, as a soldier or sailor; state of being forsaken.—SYN. of 'desert, v.': to relinquish; leave; quit; abdicate; depart from.

DESERT, n. *dĕ-zert'* [OF. *desėrte*, merit—from *deservir*, to deserve—*lit.*, a thing deserved]: that which entitles to reward or renders liable to punishment; merit or demerit; reward or pnishment justly due; worth; excellence. DESERT'LESS, a. without claim to favor, reward, or honors SYN. of 'desert': merit; demerit; excellence; worth; due.

DESERT: any portion of the earth's surface which, from its barrenness, as in the case of the arid plains of n. Africa and Arabia, or from its rank exuberance, as in the case of the *Silvas* of S. America, is unfitted to be the site of great commercial and industrial communities. Many names, each differing in meaning to some extent, are employed to designate the desert-plains of different countries. The *Desert* proper may be said to signify the vast sandy plains of Africa and Arabia; while the flats extending from the Black Sea on the n., and from Persia on the s., onward across Tibet and Tartary to the n.e. coasts of Asia, are called *Steppes;* those in the n. division of S. America,

Silvas or desert-forests; those in other portions of S. America, *Llanos* and *Pampas*. For what was long known as the Great American desert, see AMERICA (*Climate*). All these, though widely differing in individual characteristics, have in common the important physical features of wide extent and general level. The *Oases*, occasional spots in the desert where springs arise, and where the waste is enlivened by vegetation, are usually lower than the general level of the surrounding plain. A famous desert-ground is the huge tract of comparatively rainless country almost continuous from the n. Atlantic to the n. Pacific, forming a great belt of sand from e. to w., across the whole eastern hemisphere. The *Great Sahara*, grand type of all desert-grounds, beginning from Cape Nun on the n.w. coast of Africa, stretches away eastward from the Atlantic to the banks of the Nile, its e. division being frequently called the *Libyan desert*. Crossing the Nile, by the irrigation and inundations of which alone Egypt is preserved from subsiding into the waste condition of the surrounding country, the desert is again found, interposing a strip of hot sand between the right bank of the Nile and the w. border of the Red Sea, upon whose shores no rain ever falls. On the right shore of the Red Sea, desert-grounds unvisited by rains prevail over the greater portion of Arabia, and stretch onward, with occasional interruptions, over Persia, Tibet, and the Tartaries. The most extensive desert in the e. portion of these arid districts is called the Desert of Gobi, which extends from the w. extremity of Tibet n.e. to the shores of Lake Baikal. For cause of this extraordinary zone of parched land and of similar smaller tracts in other parts of the world, see RAIN.

DESERTAS, *dā-sĕr'tâs:* general name of three rocky islands in the Atlantic Ocean, s.e. of Madeira; lat. 32° 31′ n., long. 16° 30′ w. The southern and largest island is called Bugio; the centre, Deserta Grande; and the northern, Chăo Deserta Grande has a length of six m., breadth half a mile to one mile; Chao and Bugio are only about a mile in length—the latter about the same in breadth, but the former not more than a quarter. The desertas are not inhabited, but they yield considerable pasturage, and are visited at certain seasons of the year by fishermen and herdsmen.

DESER'TION FROM THE PUBLIC SERVICE OF THE COUNTRY: crime of a man absconding, during the period for which he is enlisted, from the service of the army or navy; thus deserting his flag. In war the offense is punishable by death or otherwise as a court-martial may order; in peace the penalty is usually not severe. The number of deserters from the British army is very great; in 1874, it was 7,939; in 1879, it was 4,140. The introduction of the short service system, and improved arrangments for enlisting (see ENLISTMENT), have tended to reduce the number. Many experienced officers attribute the evil to the temptations of bounty. See BOUNTY.

DESERTION OF SPOUSE: abandoning of husband by wife, or of wife by husband. In England, desertion by either spouse is made a ground of judicial separation; and desertion coupled with adultery is a ground for dissolution of marriage. There is provision for the protection of property acquired by a wife who has been deserted.

DESERTION OF THE DIET: see DIET, DESERTION OF.

DESERVE, v. *dĕ-zėrv′* [L. *deservīrĕ*, to serve zealously—from *de*, *servĭō*, I serve: Norm. F. *déservir*, to earn by service]: to be worthy of from zealous service; to merit; to be worthy of in a bad sense; to merit reward. DESER′VING, imp. ADJ. meritorious; worthy of promotion: in *OE.*, deserts. DESERVED′, pp. *-zervd′*. DESER′VEDLY, ad. *-vĕd-lĭ*, according to conduct good or bad. DESER′VINGLY, ad. *-lĭ*. DESER′VER, n. one who.

DESFONTAINES, *dā-fong-tan*, PIERRE FRANCOIS GUYOT, ABBÉ, French writer: b. Rouen 1685; d. Paris 1745. He was one of those known to us more for their controversies with Voltaire, and his biting attacks, than from their own productions. Voltaire, by the superiority of his wit, succeeded in gaining many to his opinions; but impartial judges have long agreed that he was not altogether correct, and that the criticisms of the Abbé Desfontaines, though severe, are by no means unjust. One of the works of the abbé, which had the misfortune to excite the particular displeasure of the poet, was the well-known *Dictionnaire Néologique*, intended to guard the purity of the French language.

DESHABILLE, a. *dĕz′ă-bēl* [F. *déshabillé*, undress—from *dès* for L. *dis*, apart; *habiller*, to dress—from L. *habĭlĭs*, fit, suitable]: dressed loosely: N. an undress; a loose morning dress; a careless untidy state as to dress.

DESHOULIÈRES, *dā-zoo-lē-ăr*, MADAME ANTOINETTE DE LIGIER DE LA GARDE: French poet: b. Paris 1638, Jan. 1; d. there 1691, Feb. 17. During the war of the Fronde she followed her husband into exile at Brussels, and he rescued her after she had been for eight months imprisoned at Vilvoorden as a suspicious personage. She was called the 10th muse and the French Calliope on account of her idyls, *Les Moutons* and *Les Fleurs*. Her subsequent failure in writing tragedy caused this advice to be given her: *Retournez à vos moutons*. Her best work and inspirations are found in her *Idylls*, especially in *The Sheep*, *The Flowers*, *The Birds*. Several learned societies elected her a member, and her agreeable manner, her animation and wit, made her the centre of attraction in the best societies at that period.

DESIATINE, n. *dĕs′ĭ-ă-tĭn:* a Russian measure of area, a little more than four acres, 104 desiatines = a square verst, and 3 versts = 2 English miles.

DESICCATE, v. *dĕs′ĭk-kāt* or *de-sĭk′kāt* [L. *desiccātus*, dried up—from *de*, *siccus*, dry]: to dry up; to deprive or exhaust of moisture; to become dry. DES′ICCATING, imp.

DES'ICCATED, pp. ADJ. dried up. DES'ICCANT, a. *-kănt*, drying: N. a medicine that dries a sore; it has astringent properties checking secretion and exhalation: examples are calcium, quicklime, fused carbonate of potash, and oil of vitriol. DES'ICCA'TION, n. *-ĭk-kā'shŭn* [F.—L.]: the act of making dry; the state of being dried by heat, dry air, or chemical agents which have no affinity for water. DESIC'CATIVE, a. *-kă-tĭv*, tending to dry. DESICCATION CRACKS, in *geol.*, rents in sedimentary strata, caused by shrinkage through drying. Were such desiccated beds to be overlaid by a new deposit of mud or other soft matter, portions of it would enter these cracks, and the two strata, on being separated (after consolidation) would present—the lower, the 'mold,' and the upper, the 'casts' of these fissures. Such appearances are frequent among the strata of all formations, and are not to be confounded with *joints*, *cleavage*, and similar phenomena.

DESIDERATE, v. *dĕ-sĭd'ẽr-āt* [L. *desiderātus*, earnestly wished for: It. *desiderare;* F. *désirer*]: to wish for earnestly; to want; to miss. DESID'ERATING, imp. DESID'ERATED, pp. DESID'ERATIVE, a. *-ā-tĭv*, expressing or denoting desire. DESID'ERA'TUM, n. *ā-tŭm*, DESID'ERA'TA, n. plu. *-ā'tā* [L.]: anything desired or wanted; any desirable improvement.

DESIGN, v. *dĕ-zīn'* or *-sīn'* [F. *désigner*, to describe—from L. *designārĕ*, to mark out—from *de*, *signo*, I mark or seal: It. *designare*]: to trace out by marks; to project; to form in the mind; to intend; to purpose; to form or plan by drawing the outline; to plan; to invent: N. a project; a scheme; purpose; intention; a plan or representation of a thing by an outline; an idea or plan in the mind meant to be expressed in a visible form; figures or drawings for cloth, etc.; the plan of a building in all its parts. DESIGN'ING, imp. ADJ. forming a design; insidiously contriving schemes of mischief; deceitful: N. the act of delineating the appearance of objects. DESIGNED', pp. *-zīnd'*. DESIGN'ER, n. one who. DESIGN'ABLE, a. *-ă-bl*, that may be designed or marked out. DESIGN'EDLY, ad. *-ĕd-lĭ*, intentionally. DESIGN'LESS, a. without design or intention. DESIGN'LESSLY, ad. *-lĕs-lĭ*. A SCHOOL OF DESIGN, an institution in which are taught the principles of drawing as they are connected with the industrial arts. DESIGNATE, v. *dĕs'-ĭg-nāt* [L. *designātus*, marked out]: to mark out or show; to distinguish by marks or description; to name; to point out. ADJ. pointed out or named, as a bishop designate. DES'IGNATING, imp. DES'IGNATED, pp. DES'IGNA'TION, n. *-nā'shŭn* [F.—L.]: the act of pointing out; a showing or pointing; a distinguishing name or mark; appointment. DES'IGNATIVE, a. *-nā-tĭv*, serving to indicate. DESIGNMENT, n. *dĕ-sīn'mĕnt*, sketch; delineation; purpose.—SYN. of 'design, v.': to mean; sketch; propose; project; delineate; trace out; draw; indicate; show; select; contrive;—of 'designate'; to style; denominate; describe; characterize; indicate; entitle—of 'designation': name; title; ap-

pellation; denomination; indication; allotment; application; signification.

DESIGN′, in Pictorial Art: preliminary work, either in outline or color, in which the conception of the artist is indicated, and more or less fully expressed. The design ought to exhibit the whole composition and drawing of the work, though the last only in a general way. The design ought thus to be a correct, though not a complete, representation of the future work. When colors are employed in a design, it is rather tentatively, and for the purpose of ascertaining what their effect will be, than with a view to actually producing the effect required. A sketch differs from a design, inasmuch as the former is generally applied to a first drawing from an object placed before the artist; the latter, to a first drawing of an object which he has imagined, either wholly, or in the attitude and combinations in which he represents it. In architecture, the term is applied to a drawing mathematically correct, but in which the effects to the eye which will ultimately be produced by distance and by light and shade, are altogether ignored. An architectural design is consequently scarcely intelligible on first sight.

Designing on wood for wood-cuts or engravings is now a distinct profession, followed by a class of artists. A design of this kind consists of a drawing in pencil on the wood, the effects being as closely as possible what the printed engraving is intended to represent. See Wood-Engraving.

DESIGN, Schools of, schools in which art is taught with an industrial application in view rather than a purely æsthetic end. Theoretically such schools may be considered as intermediate between schools of technology, in which (with the exception of the architectural courses) designing is of a purely mechanical nature and application, and schools for the training of artists; yet in actual practice this distinction is not always followed. The best results in applied art are produced by foundation work similar to that essential in preparation for a distinctively æsthetic career. The courses in such schools vary in detail but generally include most of the following branches: free-hand drawing; the theoretical principles of decoration, and the history of art—especially in its decorative aspects; copying and variation of designs; original designing for textile fabrics, wall-paper, stained-glass, pottery, leather-work, book-covers, etc.; and the study of the best examples of designing—for which accessible museum collections are essential. To this is added instruction in technical manipulation.

The definite endeavor to promote art education with the purpose of developing and improving the art industries of the nation had its rise in England as a result of the first international exhibition, that of 1851, at Hyde Park, London. In the United States a similar movement originated in Boston in 1870, and was an outcome of the former. The related branches of industrial art drawing and

manual training owed much to the impetus given by the Centennial Exhibition of 1876. The new spirit was felt by the public schools and wrought marked changes in them during the next quarter of a century, and museums of art were created and developed. Among the institutions offering courses in applied art in the United States, may be mentioned the schools of Cooper Union; the Lowell Free School of Industrial Design (1872), affiliated with the Massachusetts Institute of Technology; the School of Design for Women in Philadelphia; the School of Design of the University of Cincinnati; and the University of Minnesota, which has a four years' course in drawing and industrial art. The large cities of Europe were provided with facilities for teaching industrial art long before such a necessity was apparent in Great Britain and the United States. In Paris the École Nationale et Spéciale des Arts Décoratifs, in Berlin the Bau Akademie, and in Vienna the Imperial Art Institute, may be especially noted. The great schools devoted to the training of artists created the atmosphere and impulse without which the more practical schools would be impossible, but they hardly come within the scope of this review. Among the results produced in Great Britain by the recognition in 1851, of the superiority of France in the arts of applied design, was the creation of the South Kensington Schools and Museum of Art, which have been powerful factors in effecting the great change in that nation.

DESIGNS', Copyright in: ownership protected by law in designs for articles, whether of ornament or utility. According to the U. S. copyright laws as they existed 1888, Aug., any person desiring to secure a copyright for a painting, statue, model, or design intended to be perfected as a work of the fine arts, so as to prevent infringement by copying, engraving, or vending such design, was obliged to accompany his application for copyright with a definite description of the same, and to send to the librarian of congress within 10 days from the completion of the work a photograph of it at least as large as 'cabinet size.' A copyright may be secured for a projected work as well as for a completed one. A fee of 50 cents must accompany the application and description and 50 cents in addition for each certificate of copyright that may be desired. The copyright is not perfected till the photograph of the article has been forwarded as above, and no copyright is held to be valid unless the official notification is inscribed upon some portion of the face or front thereof or on the face of the substance on which the same is mounted. Any person printing or inscribing the official notice before obtaining the copyright will be liable to a fine of $100. See Copyright.

DESINENCE n. *dĕs'ĭ-nĕns* [L. *desĭnens*, leaving off, desisting—from *de, sinens*, letting, giving leave: It. *desinente*]: termination; end; close. Des'inent, a. *-nĕnt*, ending; lowermost.

DESIO, *dā-sē′ō:* town of n. Italy, province of Milan. It is well-built, surrounded with gardens and vineyards, and has a fine hospital. Pop. 5,500.

DESIRADE, *dā-zē-râd′*, or DESIDERADE, *dĕs-ĭd-ėr-ad′*, or DESEADA, *dĕs-ė-â′da:* island, first of Columbus's discoveries during his second voyage; about 4 m. e. of Guadeloupe (q.v.) of which, under France, it is a political dependency; area about 10 sq. m. The people are chiefly emancipated slaves. The surface is elevated in proportion to the area, and the soil, though not generally fertile, is yet said to yield excellent cotton. Pop. abt. 2,000.

DESIRE, v. *dĕ-zīr′* [F. *désir*, a desire; *désirer*, to desire —from L. *desiderārĕ*, to long for, to desire; probably from *siderā*, the stars, and thus *lit.*, to turn the eyes from the stars, hence to regret]: to wish or long for; to ask; to entreat; to request: N. a wish to obtain; some degree of eagerness to gain and possess; a coveting for some object of pleasure or delight; request; prayer; that which is desired. DESI′RING, imp. DESIRED′, pp. *-zīrd′*. DESI′RABLE, a. *-zī′rā-bl* [F.—L.]: that is to be desired: that which may be longed for; pleasing; agreeable. DESI′RABLY, ad. *-rā-blĭ*. DESI′RABLENESS, n. *-bl-nĕs*, the quality of being desirable. DESI′RER, n. one who. DESIRE′LESS, a. free from desire. DESI′ROUS, a. *-rŭs*, wishing to obtain; anxious to possess; coveting. DESI′ROUSLY, ad. *-lĭ*.—SYN. of 'desire, n.': wish; inclination; craving; appetency; eagerness; aspiration; longing; lust; request; petition.

DESIRE, in psychology: the conscious longing for or want of something—an emotional condition in which there is a sense of striving for some object more or less clearly present in thought.

Desire is sometimes confounded with physiological lack or need. Some of the strongest desires do have their beginning in organic craving, but there must have been some previous experience of satisfaction, i.e., some memory of the end towards which the craving tends, in order to turn the need into desire. A child's first movements to take food are instinctive, but later his movements towards food represent desire. Again, it is said that an object—as food, an ornament, a picture—suggests or creates the desire for itself. This is misleading. Although it is true that the presence of such a thing may intensify and define the desire, yet desire as an emotional condition presupposes some instinctive or habitual tendency towards acquiring such things. The motor element in desire is more apparent when we remember that the real object of a wish is not merely an isolated thing like a book or a table, but it is the self in some relation with the thing. Dewey has said that what a boy wants is not simply an apple, but the situation of himself eating the apple. The experience of wanting is sometimes disagreeable and sometimes agreeable: when attention is centred upon the fact that we lack (for we do not desire things which are already in possession) the condition is unpleasant, but when attention

is occupied with the thought of the object the condition is pleasant.

Desires may be pathological, as in dipsomania.

In ethics: desires are the raw material of conduct, or moving powers in action, and the problem of moral conduct is how to control or direct desire. That which does control a given desire is will, but will itself is never anything except a stronger or more inclusive desire. It is often said, and justly, that will consists of desire plus a fiat, a command or a consent. This consent, however, is the consent or concurrence of other desire, the fact of harmony between desires. The relation of desire to the good, then, is this, that good is the concord and fulfilment of all wishes.

In oriental and in pessimistic ethics the highest good is the cessation of all desire.

Literature.—Angell, *Psychology;* Baldwin, *Handbook of Psychology, Feeling and Will;* Dewey, *Psychology, Syllable of Ethics;* Höffding, *Psychology;* Mackenzie, *Manual of Ethics;* et. al.

DESIST, v. *dĕ-sĭst'* [F. *désister*—from L. *desistĕrĕ*, to leave off—from *de, sisto*, I stand: It. *desistere*]: to leave off; to forbear; to stop; to cease to act; to discontinue. DESIST'ING, imp. DESIST'ED, pp. DESISTANCE, n. *dĕ-sĭst'ăns*, ceasing to act, a stopping.

DESJARDINS, *dā-zhâr-dăng*, ALPHONSE: Canadian journalist and politician: b. Terrebonne, Quebec, 1841, May 6. He was educated at Masson and Nicolet colleges, and was admitted to the bar in 1862. In 1868 he turned his attention to journalism, was on the staff of *L'Ordre*, and later became editor-in-chief of *Le Nouveau Monde*. He assisted in organizing the Papal Zouaves sent to the aid of the Pope in 1868, and is a member of the Order of Pius IX. He was a member of the lower house of the Canadian Parliament 1878–92, and was then called to the Senate. In 1893 he was mayor of Montreal, and in 1896 for a short time minister of militia, and then minister of public works.

DESK, n. *dĕsk* [AS. *disc*, Dut. *disch;* Ger. *tisch*, a table, a board; L. *discus*, a round plate of stone or metal]: a sloping table for writing on; a portable writing-table in the form of a box when shut; the part of a pulpit on which the Bible lies: V. to shut up in a desk. DESK'ING, imp. DESKED, pp. *dĕskt.*

DES'MAN: see MUSK RAT.

DE SMET, *dē smĕt'*, PETER JOHN: American Jesuit missionary to the Indians: b. Dendermonde, Belgium, 1801, Dec. 31.; d. St. Louis, Mo., 1873, May 23. In 1822, being yet only a scholastic in the order, he was sent by his superiors to join the Jesuit mission in the United States and was an instructor first in the Indian school at Florissant, Mo., and then (1828) in the university newly founded at St. Louis. After this, having been ordained priest, he entered on his destined field of labor as missionary to the aborigines,

traversing on foot or in canoes or with whatever means of conveyance was possible, the regions inhabited by the Potawatomies, Sioux, Blackfeet, Flatheads, Pend' Oreilles, and other tribes in the valleys of the Missouri, Yellowstone, Platte, and Columbia, and on both sides of the Rocky Mountains. But in the meantime he made visits to Europe repeatedly, to collect funds for support of the missions and to enlist young men for labor in the same field. On many occasions he was a commissioner on behalf of the United States government in pacifying the redmen when, provoked to fury by the wrongs done them, they went on the war path. He wrote several narratives of his experience in the western wilds, among them: *Letters and Sketches of a Residence in the Rocky Mountains* (1843); *Oregon Missions* (1847); *Western Missions* (1863); *New Indian Sketches* (1868).

DESMIDIACEÆ, *dĕs-mĭd-ī-ā′eē-ē*, or DESMIDS, n. plu· *dĕs′mĭds* [Gr. *desmos*, a chain; *eidos*, appearance]: minute fresh-water plants of a green color, somewhat like diatoms, but without a silicious epidermis. DESMID′IAN, n. *-ĭ-ăn*, one of the order *Desmidiaeeæ*, class *Conjugatæ*, and branch *Zygosporeæ*, of some prevalent classifications. They are included under Zygospores because the two symmetrical half-cells, of which they are often composed, send out at certain seasons each a conjugating tube; these tubes unite and form a rounded zygospore or resting cell, which subsequently emits two masses of protoplasm that become two individuals, like the parent. The desmidiaceæ are of many beautiful forms, such as a dumb-bell or a star, or repeated groups of cells in fours; and are distinguished from diatoms by their lack of silicious covering; also by their color, which is a herbaceous green, while the *Diatomaceæ* are generally brownish. Unlike the *Diatomaceæ*, they shrivel up, and lose their form in drying. They are, like them, miscroscopic, but are usually found in stagnant or very slowly running water, sometimes in brackish, but never in salt water. They may often be procured in great numbers, by pouring the water in which they exist upon a cloth; and if the cloth is kept moist, they will live for a long time, and their progress may be observed. They all exhibit a transverse constriction, sometimes not very distinct, but often almost dividing the single cell which forms the organism into two parts. It is at this constriction that new cells are formed; but this process ceases after a while and a true reproduction takes place in the manner already described by conjugation and zygospore. It is very much on account of these modes of reproduction and of the presence of starch in the desmidiaceæ that they are confidently referred by naturalists to the vegetable kingdom. See Ralfs on the *British Desmidicæ*.

DES MOINES, *dē-moyn′*, Iowa, city, capital of the state and county seat of Polk co.; it is situated near the geographical centre of the state, at the junction of the Des Moines and Raccoon rivers. It has 8 steam railways having an aggregate mileage of 37,500 miles, with 110

passenger trains coming and going daily; also 6 inter-urban lines, one running north to Boone and Ft. Dodge, 90 miles, one east to Colfax and Newton 35 m., another northwest to Perry 35 m., besides three shorter ones extending south and west.

History.—The site formed a part of the Sac and Fox Indian reservation which the govt. purchased by treaty of 1842. The Indians were allowed to remain three years under the protection of the U. S. troops, who established a fort for which the original name, Raccoon Forks, was changed to Fort Des Moines, and at the expiration of this period the govt. set apart for its own use a tract of one sq. mile, and opened the remainder to settlement. In 1846 the govt. ceded a tract of 160 acres to the state. The general assembly at once authorized the organization of Polk co. The first survey of the town was made in 1846, July 8; the town was incorporated in 1853, and designated by act of the general assembly, as the capital of the state, in place of Iowa City. A $35,000 state house was built, the archives were removed from the former capital by ox-teams late in 1857, and in the same year the town was chartered as a city with 'Fort' omitted from its name. It extended about 2½ m. n. and s. by 4½, e. and w., and has since been enlarged to 6 by 9 miles. The first sermon (funeral) was preached and the first church (M. E.) organized in 1845, the first school house built 1848, the first newspaper established 1849, and the first railroad train reached the city Aug. 27, 1866.

Industries.—Des Moines has 294 manufacturing establishments employing 5,000 wage earners who are paid annually $3,000,000, and the value of whose products is $19,000,000 a year. There are also 29 wholesale houses, 19 banks with a capital stock of $2,170,000, and deposits of $28,744,000. Coal in vast quantities is mined within the city limits, affording an abundance of cheap fuel for manufacturing purposes, and besides is shipped to other localities.

Public Buildings.—The state capital building, one of the most imposing and substantial in the United States, the Iowa State Soldiers' and Sailors monument, and the new State Historical building, are an honor to the city and state. The large old postoffice and federal building is no longer adequate to the govt's needs, and is being replaced by a much larger and finer building. A large and elegant public library building, and a colossal new court house are ornaments to the city. The city is well supplied with modern hotels of the best class, and a mammoth auditorium affords accommodations for the great conventions which are constantly gathering in the city. The city has about 100 churches, representing all the leading denominations, including 1 Friends' meeting house, 4 Hebrew synagogues, 1 Latter-day-Saints' church, 1 Mormon, and 1 Christian Scientist. There are more than 50 public school buildings, besides the Des Moines College, Baptist, founded in 1865, Drake University, Christian,

established in 1881, Highland Park Normal College, a College of Osteopathy, besides various business and technical schools.

Parks, City Government, etc.—The city has 19 public parks, embracing 600 acres, and the state agricultural society has extensive and beautiful grounds and buildings near the city where huge annual exhibitions are held of every thing produced in the state. The city has 80 miles of brick and asphalt pavement, is lighted by gas and electricity, and has excellent water and sewage systems, with an unsurpassed street railway system. The present form of govt. 1907, is composed of mayor and city council, but the city has just voted, June 20, to establish a government by commission, on a plan devised at the 1907 session of the general assembly, to take the place of the present form, being the first city in the state to adopt the new plan of municipal government. The city heretofore having a number of organized school districts, has recently voted to consolidate all into a single organization. Pop. (1905) 75,428; (1910) 86,368.

DES MOINES College, a coeducational institution at Des Moines, Iowa, was organized in 1865 under the name University of Des Moines. This name was afterward changed to Des Moines College in order to conform more nearly to the aim of its supporters, the Baptists of Iowa. It is now entirely free from debt, with an invested endowment of about $80,000 and pledges sufficient to increase this sum to $100,000. It also has a beautiful campus comprising two blocks. An additional block adjoining as an athletic field, the whole comprising about nine acres and valued, with the buildings, at $60,000. The school has four departments: college, academy, music, and art. The college has steadily maintained as its aim a high class of work, and has taken rank with the best of Iowa colleges. It has 22 instructors. It was the first college to become affiliated with the University of Chicago. Under this arrangement the work of the school is constantly subject to the approval of the University.

DES MOINES River: largest river in Io,; formed by the e. and w. forks in s.w. Minn.; flows s.s.e. to the capital city, then s.e. to a point about 4 m. below Keokuk, where it empties into the Miss. river; estimated length 500 m. It drains 10,000 sq. m. in Io.; flows through a region rich in agriculture and grazing grounds, bituminous coal, and timber; receives the waters of Raccoon, North, Middle, South, and Boone rivers; and with a fall of 8 ft. supplies a large number of valuable mill sites along its banks.

DESMONCUS, *dĕz-mŏngk′ŭs:* genus of palms, with slender stems, climbing over shrubs and trees, like the Rattans (*Calamus*) of the E. Indies. They are the only American palms of this character. They have alternate pinnate leaves, with long hooked spines instead of several

of the uppermost leaflets, which make them formidable to those who attempt to penetrate the forests where they grow. The species are numerous and all American.

DESMOULINS, *dā-mô-lăng'*, CAMILLE: 1762-1794, Apr. 5; b. Guise, in Picardy; a prominent personage of the French Revolution. He studied law at the Collége Louis-le-Grand, Paris; but on account of a stutter in his speech, did not prosecute the profession. His mind was filled with lofty but confused notions of classical republicanism, which found vent on the eve of the revolution in his *La Philosophie au Peuple Français* (Par. 1788), and *La France Libre* (Par. 1789). To his exaggerated denunciation was owing that outburst of popular fury which resulted in the destruction of the Bastile on the night of 1789, July 14. In the events of the Champ de Mars, 1792, Aug. 10, Desmoulins, like his friend Danton, took a leading part, but was less implicated in the September massacres. Elected to the National Convention by the people of Paris, he voted for the death of Louis XVI. His relation to Danton, which had always in it something of dependence, induced him to take up the pen against the Girondists, and in his *Histoire des Brissotins*, he covered these moderate republicans with ridicule. In this, however, Desmoulins was not quite sincere, for many of the Girondists he highly esteemed, and he was himself by nature much more like Vergniaud and Brissot than like Robespierre and St. Just. When the guillotine was erected, Desmoulins saw his error, and bitterly repented his facile folly. Toward the end of 1793, he began to publish *Le Vieux Cordelier;* a journal which recommended, among other things, that the forms of justice should be restored, and attacked the members of the *Comité de Salut Public* Twice accused before the Jacobin Club, he was at length on the night of 1794, Mar. 30, with Danton, arrested, and brought before the Revolutionary Tribunal. When asked his age, Desmoulins replied: *'J'ai l'âge du sans-culotte, Jésus, c'est-à-dire trente-trois ans, âge fatal aux révolutionnaires.'* He was condemned without a hearing, and mounted the scaffold with Danton, 1794, Apr. 5 His wife, the beautiful Lucile Duplessis, vainly endeavored to excite an insurrection in his favor, and a fortnight later, she also was guillotined.—Desmoulins was essentially an enthusiast and hero-worshipper, always leaning for support on some stronger spirit than his own. His first idol was Mirabeau, after whose death he devoted himself to Danton. His aspirations were noble, his sympathies magnanimous, but he had neither sufficient moral resolution to oppose the political excesses of the popular party, nor even, until the close of his career, sufficient insight to assure him of their injustice and folly. Gifted abundantly by nature, as the light-hearted Camille was, with wit, fancy, and feeling, one cannot help regretting that he did not live in less troublous times, when he might have given to the world, in the form of poesy or fiction, the treasures of his rich and sparkling genius.

DESNA, *dĕs'nâ:* river of Russia. It rises in the govt. of Smolensk, 50 m. s.e. of the town of Smolensk, flows s.e. through the govts. of Smolensk and Orel, until it reaches Briansk, where it enters the govt. of Tchernigov, through which it flows s., then s.w. to the town of Tchernigov, and finally joins the Dnieper nearly opposite Kiew. The Desna is 500 m. in length, and is navigable through almost all its course. Its chief affluents are the Seim, from the left, and from the right, the Snov.

DE SOLA, Abraham: Canadian rabbi: b. London, England, 1825, Sep. 18; d. New York 1882, June 5. Under the careful supervision of his father he received a thorough Hebrew education, and having perfected himself in his general studies, he was called in 1847 to Montreal, Canada, by its Portuguese-Hebrew congregation. His scholarship and energy soon brought him to the front, and in 1848 he was appointed professor of Hebrew and Semitic literature in McGill College, Montreal. His literary labors consisted partly of contributions to the *Occident* of Philadelphia and *The Jewish Messenger* of New York, on historical and rabbinical themes, and partly of a revision of the Portuguese-Hebrew liturgy. In 1872, Jan. 9, he opened the House of Representatives of Washington with prayer; the first foreign clergyman to have received the privilege. Among his more important works may be mentioned. *The Sanatory Institutions of the Hebrews; Lectures on the Mosaic Cosmogony;* and *Scripture Zoology.*

DESOLATE, a. *dĕs'ō-lāt* [L. *desolātus,* laid waste, abandoned—from *de, solus,* alone: It. *desolare:* F. *désoler*]: laid waste and abandoned; uninhabited; desert; solitary; in a ruinous condition; without a companion; comfortless: V. to deprive of inhabitants; to lay waste; to ruin. Des'olating, imp. Des'olated, pp. Des'ola'tion, n. *-ō-lā'-shŭn* [F.—L.]: the act of desolating or laying waste; a solitary waste; ruin; destruction; a place deprived of inhabitants; gloom; great sorrow or distress. Des'olately, ad. *-lĭ.* Des'olateness, n. state of being desolate. Des'olater, or Des'olator, n. *-lā-tėr,* one who. Des'ola'tory, a. *-tėr-ĭ,* causing desolation.—Syn. of 'desolate, a.': lonely; waste; neglected; destroyed; afflicted;—of 'desolation': ravage; devastation; havoc; waste; destitution; sadness; melancholy; gloominess; gloom.

DE SOTO, *dā so'to,* Hernando: 1496—1542, June 5; b. Estremadura, Spain: discoverer. He received a univ. education through the favor of Pedrarias Davila, accompanied his patron when appointed gov. of Darien, 1519, and fearlessly opposed his oppressive administration. In 1528 he left Davila's service and undertook an exploration of the coasts of Guatemala and Yucatan for the purpose of discovering the stream that navigators believed connected the Atlantic and Pacific oceans. After examining 700 m. of coast line he abandoned his quest, and associated himself with Pizarro, then about to embark on his expedition for the conquest of Peru, 1532. He explored the high-

lands of that country, discovered the road that led to the capital, was commissioned by Pizzaro ambassador to the Peruvian monarch, opposed the detention of the inca after his capture and the payment of heavy ransom, and was specially conspicuous in the engagement that preceded the occupation of the capital. After the conquest he returned to Spain with a large fortune, married his patron's daughter, and obtained the emperor's consent that he should attempt the conquest of Fla. at his own expense. He organized an expedition of 20 officers, 24 priests, and 600 men, and sailed from San Lucas 1538, Apr., bearing the emperor's commission as gov. of the island of Cuba and pres. of the yet unacquired Fla. Leaving the women of the expedition at Havana, he pushed across the Gulf of Mexico, and anchored in the present Tampa Bay, on the w. coast of Fla., 1539, May 25. In July he sent all his ships to Havana, and then for nearly four years wandered from one point to another, in a vain search for the new Eldorado, which was believed to be richer in precious metals than any country then known, constantly deceived by the Indians, who directed him to remote sections for the coveted gold, and sustaining heavy losses in men and material through their hostility He passed the winter of 1539–40 near Flint river, Fla., reached Mobile, Ala , in Oct , and then pushing forward in a n.w. direction, discovered the Miss. river early in 1541. The next winter he spent on the Washita river, and while returning down the Miss. died suddenly from fever. His body was sunk in the river that he discovered.

DESPAIR, n. *dĕ-spār'* [F. *désespoir,* despair; OF. *desperer,* to despair—from L. *desperārĕ,* to have no hope; *desperātus,* given up, irremediable—from *de, spero,* I hope (see DESPERATE)]: utter hopelessness; complete despondency; desperation; hopelessness; loss of hope in God's mercy: V. to be without hope; to give up all expectation. DESPAIR'ING, imp. DESPAIRED', pp. *-spārd'*. DESPAIR'ER, n. one who. DESPAIR'INGLY, ad. *-lĭ*

DESPATCH: see DISPATCH.

DESPERADO: see under DESPERATE.

DESPERATE, a. *dĕs'pär-āt* [L. *desperātus,* given up, irremediable—from *de,* away; *spero,* I hope: It. *disperare:* F. *désespérer*]: without hope; reckless; beyond hope of recovery; irretrievable; without care of safety; furious. DES'PERATELY, ad. *-lĭ,* hopelessly; furiously; madly; despairingly. DES'PERA'DO, n. *-ā'dō* [Sp.]: a reckless, furious man; one regardless of consequences; a madman—applied to the reckless criminal classes. DES'PERA'TION, n. *-ā shŭn,* a giving up of hope; despair; disregard of danger. DES'PERATENESS, n. the state of being desperate.—SYN. of 'desperate': despairing; hopeless; desponding; rash; precipitate; headlong; furious; mad; frantic; forlorn; irrecoverable; irretrievable.

DESPICABLE: see under DESPISE.

DESPISE, v. *dĕ-spīz′* [OF. *despire*, to despise; *despisant*, and *despiz*, despising—from L. *despicĕrĕ*, to look down upon, to despise—from *de*, *specĭō*, I look]: to look down upon with scorn; to have a very low opinion of; to disdain. DESPI′-SING, imp. DESPISED′, pp. *-spīzd′*. DESPI′SER, n. *-zĕr*, one who. DESPI′SABLE, a. *-zā-bl*, contemptible. DESPI′SINGLY, ad. *-zĭng-lĭ*. DESPI′SEDNESS, n. *-zĕd′nĕs* the state of being despised. DESPICABLE, a. *dĕs′pĭ-kā-bl*, that should be despised; vile; contemptible. DES′PICABLY, ad. *-kā-blĭ*. DES′PICABLENESS, n. *-kā-bl-nĕs*, the quality of being despicable; meanness; vileness.—SYN. of 'despicable': mean; worthless; paltry; pitiful; degrading; base; sordid; low;—of 'despise': to scorn; contemn; slight; undervalue.

DESPITE, n. *dĕ-spīt′* [OF. *despit*, contempt, despite; F. *dépit*, vexation, anger—from L. *despectus*, a looking down upon]: violent hatred with contempt; extreme malice; defiance of opposition or difficulties, or contempt of them: V. to tease; to offend; to vex. DESPI′TING, imp. DESPI′TED, pp. DESPITE′FUL, a. *-fûl*, full of spite; malicious. DESPITE′FULLY, ad. *-lĭ*, maliciously; malignantly. DESPITE′FULNESS, n. malice; hate. DESPITEOUS, a. *dĕ-spīt′ē-ŭs*, in *OE.*, full of hatred; furious. DESPIT′EOUSLY, ad. *-lĭ*, in *OE.*, in a manner full of hatred.

DESPOIL, v. *dĕ-spoyl′* [OF. *despoiller*, to despoil—from L. *despolĭārĕ*, to despoil—from *de*, *spolĭō*, I deprive of, I plunder]: to take from by force: to rob; to plunder; to divest. DESPOIL′ING, imp. DESPOILED′, pp. *-spoyld′*. DESPOIL′ER, n. one who. DESPOLIATION, n. *dĕ-spō′lĭ-ā′-shŭn*, the act of plundering; a stripping or robbing.

DESPOND, v. *dĕ-spŏnd* [L. *despondērĕ*, to promise, to lose courage—from *de*, *spondĕō*, I promise, I give good hopes for the future]: to give up hope almost; to be cast down; to lose courage; to be depressed; to begin to lose hope;—*despair* implies a total loss of hope, *despond* does not. DESPON′DING, imp.: ADJ. sinking in spirit; becoming hopeless. DESPON′DED, pp. DESPON′DINGLY, ad. *-lĭ*. DESPON′DER, n. one who. DESPON′DENT, a. low-spirited; losing courage with the loss of hope. DESPON′DENCY, n. *-dĕn-sĭ*, or DESPON′DENCE, n. *-dĕns*, cessation of effort with the loss of hope and courage; dejection of the mind; melancholy. DESPON′DENTLY, ad. *-lĭ*, almost without hope.

DESPOT, n. *dĕs′pŏt* [F. *despote*—from mid. L. *despŏtus*—from Gr. *despŏtēs*, a master: It. *despota*]: one ruling or governing without control; an absolute prince; a tyrant. DESPOT′IC, a. *-pŏt′ĭk*, or DESPOT′ICAL, a. *-ĭ-kăl*, exercising absolute or uncontrolled power; unlimited; unrestrained. DESPOT′ICALLY, ad. *-lĭ*. DESPOTISM, n. *dĕs′pŏ-tĭzm*, a government with authority unlimited or uncontrolled; the government of an absolute prince; tyranny.—Despotism in anc. classical usage, denoted the form of government which has for its object the interests either of an individual or of a class, to the exclusion of those of the community. In the former case, it is usually called a tyranny, which is

the degenerate form of monarchy; in the latter it may be either an oligarchy, which is the degenerate form of aristocracy, or an ochlocracy, which is the degenerate form of democracy. A despot is the individual or class in whose favor and for whose benefit such a government is carried on. A despot may thus include any number of persons, from unity upward—from a monarch to a mob. Modern usage applies it mostly to an individual, and with opprobrium. See MONARCH: TYRANT: DICTATOR.

DESPUMATE, v. *dĕs'pū-māt* [L. *despumātus*, having removed the froth or scum—from *de*, *spūmo*, I foam: It. *despumare*]: to throw off in foam: to froth. DES'PUMATING, imp. DES'PUMATED, pp. DES'PUMA'TION, n. *-mā'shŭn*, the act of throwing up froth or scum on the surface of a liquid; the separation of the scum or impurities from a liquid.

DESQUAMATE, v. *dĕs'kwă-māt* [L. *desquamātus*, scaled or peeled off—from *de*, *squāma*, a scale]: to peel off as scales. DES'QUAMATING, imp. DES'QUAMATED, pp. DES'QUAMA'TION, n. *-mā'shŭn*, the act of throwing off scales, as from the skin.

DESSALINES, *dā-sâ-lēn'*, JAQUES, Emperor of the island of Hayti (St. Domingo): imported as a slave into that island from the Gold Coast of Africa; d. 1806, Oct. 17. On the liberation of the slaves, 1794, Feb. 4, he was one of the most prominent of the negroes who rose in insurrection against the white colonists. After the organization of the insurrection, Dessalines occupied the position of first lieut. to the leader Toussaint l'Ouverture, and in the wars against the French troops, was always distinguished by his agility and swiftness of movement, as well as by fearlessness and ferocity. Dessalines submitted, however, and took advantage of the amnesty granted on the capture of Toussaint 1802; but soon headed another insurrection, attacked the French forces, defeated them in the battle of St. Mark, and compelled them to evacuate the island 1803, Oct. He was made gov. 1804, Jan., when the people of the island declared themselves independent; and he caused himself to be crowned as Emperor of Hayti, Oct. 8, same year, under the name of Jaques I.; but his despotism and cruelty soon alienated from him those who had been his firmest adherents. Dessalines was attacked and killed by Christophe, a negro chief, who succeeded him as Emperor Henri I. of Hayti.

DESSAU, *dĕs'sow:* town of n. Germany, cap. of the duchy of Anhalt, on the left bank of the Mulde, not far from its junction with the Elbe, about 80 m. by railway s. w. of Berlin. The country round the town is pleasant and industriously cultivated. Dessau consists of three parts, the old and new town, and the Sand, and it has besides three suburbs. It is, in general, well built, and one or two of the streets are particularly handsome. Among the principal buildings are the ducal palace, a noble structure, built 1748, with a picture-gallery, and a library containing

many MSS. of Luther; a town-hall, an elegant theatre, and several churches and benevolent institutions. Its educational establishments are numerous and excellent. It has a fine cemetery, and the environs comprise beautiful gardens. The manufactures are woolen cloth, hosiery, tobacco, and spirits. Pop. (1900) 50,849.

DESSERT, n. *dĕz-zẽrt* [F. *dessert*—from *desservir*, to clear the table—from OF. *des* for L. *dis*, apart; L. *servīrĕ*, to serve]: service of fruit, etc., at the close of a feast or entertainment.

DE STAËL: see STAËL-HOLSTEIN.

DESTERRO, *dĕs-tĕr′rō*, NOSSA SENHORA DO; or SANTA CATHARINA: city, cap. of province of Santa Catharina, Brazil: on island of same name, in lat. 27° 30′ s., long. 48° 30′ w.; 460 m. s.w. of Rio de Janeiro. It is protected by several forts, has the second-best harbor on the Brazilian coast, irregular streets, some tasteful residences, and a governor's palace, arsenal, court-house, and hospital. It has considerable trade in feathers and artificial flowers. It was nearly destroyed by a water-spout 1828. Pop. 8,000.

DESTINE, v. *dĕs′tĭn* [F. *destiner*, to destine; *destin*, destiny—from L. *destinārĕ*, to make firm, to destine: mid. L. *destĭnă*, a support: It. *destinare*]: to ordain or appoint to a certain use, state, or place; to doom; to appoint or fix unalterably. DES′TINING, imp. DES′TINED, pp. *-tĭnd:* ADJ. doomed; devoted; ordained; appointed unalterably to any state or condition. DES′TINA′TION, n. *nā′shŭn* [F.—L.]: purpose for which anything is intended or appointed; the end; the ultimate design; a place to which a person is journeying or bound. DES′TINY, n. *-nĭ*, unavoidable fate; lot, future condition appointed by the Divine will, or that appointed by human will. DES′TINIES, n. plu. *-nĭz*, in *anc. myth.*, the three Fates, supposed to preside over human life; the predetermined future state or condition, as of nations.—SYN. of 'destination': design; purpose; intention; lot; fate; doom; destiny; appointment;—of 'destine': to allot; devote; design; intend; consecrate.

DESTITUTE, a. *dĕs′tĭ-tūt* [L. *destĭtūtus*, forsaken—from *de*, *statŭō*, I set or place: F. *destituer*, to dismiss]: forsaken; not possessing; in want of; needy; friendless. DES′TITU′TION, n. *-tū′shŭn* [F.—L.]: utter want; poverty.

DESTROY, v. *dĕ-stroy′* [OF. *destruire*, to destroy—from L. *destru′ĕrĕ*, to destroy—from *de*, *strŭō*, I pile up, I build]: to pull down; to demolish; to ruin; to lay waste; to kill; to put an end to. DESTROY′ABLE, a. *-ă-bl*, capable of being destroyed. DESTROY′ING, imp. DESTROYED′, pp. *-stroyd′*. DESTROY′ER, n. one who.—SYN. of 'destroy': to consume; raze; throw down; overthrow; subvert; desolate; devastate; deface; extinguish; extirpate; slay; kill; dismantle.

DESTRUCTIBLE, a. *dĕ-strŭk′tĭ-bl* [F. *destructible*—from mid. L. *destructib ĭlis*—from *de*, *structus*, piled up or built]: that may be destroyed. DESTRUC′TIBLENESS, n. *-bl-nĕs*,

the state or quality of being able to be destroyed; destructibility. DESTRUC'TIBIL'ITY, n. *-bĭl'ĭ-tĭ*, the being capable of destruction. DESTRUC'TION, n. *-shŭn* [F.—L.]: the act of destroying; ruin; demolition; slaughter; death. DESTRUC'TIVE, a. *-tĭv*, deadly; fatal; causing destruction; mischievous; wasteful. DESTRUC'TIVELY, ad. *-lĭ*. DESTRUC'TIVENESS, n. the quality of destroying; propensity to destroy.—SYN. of 'destruction': devastation; extermination; desolation; subversion; overthrow; extirpation; extinction; downfall; havoc; slaying;—of 'destructive': ruinous; baleful; pernicious; malignant; mortal; poisonous; malignant.

DESUDATION, n. *dĕs'ū-dā'shŭn* [L. *desūdo*, I sweat greatly—from *de*, *sūdo*, I sweat: F. *désudation*]: a profuse sweating.

DESUETUDE, n. *dĕs wē tūd* [F. *désuétude*—from L. *desŭētūdo*, disuse]: disuse; the cessation of use; discontinuance of a custom or practice. In the law of Scotland, desuetude is a technical term signifying that repeal or revocation of a legal enactment which is effected, not by a subsequent enactment in a contrary sense, but by the establishment of a contrary use, sanctioned by the lapse of time and the consent of the community. The corresponding term in English law is *nonuser;* but neither the word nor the idea attached is familiar to that system. The rule in England is, that a statute once formally enacted by the legislature, remains in force, however unsuited to altered conditions, till it be repealed by another statute. The repeal may be by implication, but here the law watches with a jealous eye. Such repeal 'is to be understood,' says Blackstone, 'only when the matter of the latter statute is so clearly repugnant that it necessarily implies a negative. So far was this principle carried, that it was formerly the rule, that if a statute repealing another was itself repealed afterward, the first statute was revived without any formal words for that purpose. But this rule has now been changed. Even where desuetude is held as a practical repeal of a law, by desuetude is meant something more than mere non-use for a period of time, however great. There must be contrary use of a positive kind, inconsistent with the statute, and of such a kind as to prove the altered sense of the community; there must, in short, be consuetudinary law in a negative sense; and the so-called desuetude thus amounts to a repeal of the statute law by consuetudinary law. Both rules are liable to objections. The result of that followed in England has been, that statutes have remained on the statute-book without formal repeal, after their enforcement had become morally impossible. Of this it may be mentioned, as one single example, that the ancient judicial combat was formally demanded in virtue of an unrepealed statute, and the barbarism had in point of form to be conceded in the present century: see DUEL. But, since 1869, the English statutes have been weeded of all obsolete and inconsistent

enactments, and a new edition has been published by authority, containing only such parts as are in force.

DESULTORY, a. *dĕs′ŭl-tėr-ĭ* [L. *desultōrĭŭs*, leaping, inconstant; *desultor*, a leaper, one who leaps from one horse to another—from *de*, *sălĭō*, I leap]: leaping from one thing to another; unconnected; rambling; hasty; loose; without method. DES′ULTORILY, ad. *-lĭ*. DES′ULTORINESS, n. a passing from one thing to another without order or method; unconnectedness.—SYN. of 'desultory': cursory; loose; summary; roving; discursive; unsettled; inconstant; slight; disconnected; unmethodical.

DESVAUXIACEÆ, n. plu. *dā-vōz-ĭ-ā′sē-ē* [named for M. *Desvaux*, French botanist]: bristleworts, an order of small herbs; natives of the South Sea Islands and New Holland.

DESYNONYMIZE, v. *dē′sĭ-nŏn′ĭ-mīz* [L. *de*, and *synonymous*]: to deprive a word of its synonymous character by attaching to it a specific meaning. DE′SYNON′YMIZING, imp. DE′SYNON′YMIZED, pp. *-mīzd*.

DETACH, v. *dĕ-tăch′* [F. *détacher*, to unfasten—from F. *dé*, OF. *des* for L. *dis*, apart; F. *tacher*, to fasten: It. *distaccare*, to detach, to untie]: to separate a small part from the main body; to disunite; to part from. DETACH′ING, imp. DETACHED′, pp. *-tăcht′*. DETACH′MENT, n. *-mĕnt* [F.—L.]: the act of detaching; troops or ships, in small but indefinite number, sent for special duties from the main body. DETACHED WORKS, in *fort.*, works so far separated from the fortress as to receive no support from its fire.—SYN. of 'detach': to disengage; dissever; disentangle; extricate; sever; disjoin; withdraw; part.

DETAIL, v. *dĕ-tāl′* [F. *détail*, a detail; *détailler*, to divide, to piecemeal—from F. *dé*, L. *de*, fully: F. *tailler*, to cut]: to give particulars, to relate minutely or distinctly; in *mil.*, to appoint men for certain temporary duties: N. *dē′tāl*, a minute or particular account; a narration of particulars. DETAIL′ING, imp. DETAILED′, pp. *-tāld′*: ADJ. given in every particular. DE′TAILS, n. plu. *-tālz*, the parts of a thing treated separately and minutely; in *mil.*, the men appointed for certain temporary duties. DETAIL′ER, n. one who details. IN DETAIL, in every particular; circumstantially.—SYN. of 'detail, v.': to particularize; enumerate; appoint;—of 'detail, n.': account; narrative; relation; recital; explanation; narration.

DETAIN, v. *dĕ-tān′* [F. *détenir*—from L. *detinērĕ*, to keep back—from *de*, *tenĕō*, I hold or keep: It. *detenere*]: to keep back from; to withhold; to stop, stay, or delay; to hold in custody. DETAIN′ING, imp. DETAINED′, pp. *-tānd′*. DETEN′TION, n. *-tĕn′shŭn* [F.—L.]: act of detaining; a keeping back; confinement or restraint; delay from necessity. DETAIN′ER, n. one who; in *law*, the keeping possession of what belongs to another; a writ authorizing the keeper of a prison to continue to keep a person in custody.—SYN. of 'detain': to hold; arrest; retain; retard; check; withhold; hinder.

DETARIUM, n. *dĕ-tär′ĭ-ŭm* [from *detar*, the native name in Senegal]: genus of leguminous plants, consisting of trees, natives of Senegal. Two species are known. *D. senegalense* furnished a hard wood resembling mahogany and two varieties of fruit, one sweet, the other bitter. The former is much sought for food, but the latter is said to be a strong poison. The succulent drupes of *D. microcarpum* are eaten by the negroes.

DETECT, v. *dĕ-tĕkt′* [L. *detectus*, laid bare—from *de*, *tectus*, covered]: to uncover or lay bare; to find out; to discover. DETEC′TING, imp. DETEC′TED, pp. DETEC′TER, or DETEC′TOR, n. one who or that which. DETEC′TIVE, n. *-tĕk′tĭv*, a police officer not dressed in uniform, whose duty it is to act secretly: ADJ. that detects or discovers. DETECTION, n. *-shŭn*, the act of discovering; discovery of a person or thing attempted to be concealed. DETEC′TABLE, a. *-tă-bl*, that may be found out.—SYN. of 'detect': to expose; unfold; uncover.

DETECT′IVES: persons employed for the detection of crime and apprehension of criminals. They are of various classes and include both sexes. Originally they formed a regular branch of the municipal police, and were expected to trace out the unusual crimes and mysteries which ordinary policemen had neither the time nor peculiar skill to undertake. They also constituted a national agency for the prevention and detection of civil and political crimes and intrigues. Many of the most celebrated detectives of the world have been, like the noted Vidocq of France, either reformed criminals or particularly skilful rogues who were employed by European governments, doubtless on the principle 'set a thief to catch a thief.' In late years, owing to the greater variety of service expected of them, they represent a much higher grade of citizenship, and undergo a special and severe training for their vocation. Their greatest element of success lies in a close intimacy with the criminal classes, their records, habits, haunts, and associates. In the United States there are national, state, municipal, and corporation detectives of high repute, beside a number of despicable imposters, without authority to arrest, whose work is chiefly confined to blackmailing and procuring alleged evidence for divorce suits. The U. S. Secret Service is a bureau of detectives under the control of the solicitor of the treasury dept., whose officers are employed mainly in looking out for violations of the revenue laws. They also keep a constant watch over the movements of known and suspected counterfeiters, and investigate cases of wrong-doing occurring in any dept. of the federal govt. At every custom-house there is a force, officially known as inspectors, but in reality detectives, who not only examine the baggage of all individuals coming into the country to ascertain whether they are attempting to smuggle any dutiable articles, but also the persons of such as are suspected of being smugglers. U. S. marshals, of whom there is one for each judicial district, though general officers of U. S. courts, are vested with

authority similar to that of sheriffs of counties, and are frequently engaged in purely detective work. In nearly all the states detectives are commissioned by the gov. for service within the state either of a general character, where they have a larger jurisdiction than municipal detectives, or of a special character, where their authority is confined to a specified region. Among the latter are the detectives employed by the great railroad companies, the most of whom, however, hold both forms of commission, as their work is liable to take them considerable distances from the line of their respective roads. There are also several large and reputable detective agencies, like the one established by Allan Pinkerton 1850, which have been organized under some special state act of legislature, and which by means of subordinate agencies elsewhere can track a criminal over the entire world and legally apprehend him in any civilized country, provided that under existing treaties he is extraditable for the offense charged. In very large U. S. cities bureaus of detectives are established in connection with police depts., and constitute an invaluable means of protecting the life and property of citizens and insuring the community against sudden outrages by local or wandering desperadoes. The members become specialists, and are assigned to duty accordingly. Some are charged with keeping anarchists and persons of their ilk under control; others are made responsible for the presence of certain grades of swindlers and minor rascals, and take care to keep them out of their jurisdiction; and others again are stationed in the vicinity of the great banking institutions, at the large depots, wharves, places of amusement, and whenever large crowds are apt to congregate. A skilled detective on seeing the body of a person who has been foully dealt with and its surroundings at the time, a safe that has been blown open, a house that has been robbed, or other evidence of a crime, is able to determine with approximate correctness whether the act was committed by a novice or a professional, and, if the latter, the gang that he belonged to, his confederates, and probable hiding-place.

The detective achieves success by studying the ways of lawbreakers, and becoming acquainted with the haunts of the men he seeks. For instance, William Pinkerton, of Chicago, made an exhaustive study of the class of tramps who rob country stores and post-offices, and blow off the doors of safes. Their own name for their class is 'yeggmen,' and the only way to know them thoroughly is to become one of them for a time. to live as they do, and thus secure their confidence, and gain familiarity with their system of exchanging information. The nature of detective work is such that very little authoritative matter has been printed about it. One of the first requisites of a detective is the power of keeping silence about the business or the cases on which he works. There are no printed reports and statistics of detective work that could be used in an encyclopædia. Most of the literature is of the nature of detective stories, told to amuse, and

concealing instead of making clear real occurrences or facts.

DETENT, n. *dĕ-tĕnt′* [L. *detentus*, kept back, detained —from *de*, *tentus*, held]: a stop in a clock.

DÉTENU, n. *dĕt′ĕn-ū* [F. *détenu*, detained]: a prisoner. DETENUS, n. plu. *dĕt′ĕn-ūz*, prisoners.

DETER, v. *dė-ter′* [L. *deterrĕrĕ*, to frighten from anything—from *de*, *terrĕō*, I frighten]: to hinder by fear; to discourage by considerations of danger, difficulty, or great inconvenience. DETER′RING, imp. DETERRED′, pp. *-terd′*. DETER′MENT, n. *-mĕnt*, the act or cause of deterring; that which deters. DETER′RENT, a. having the power or tendency to deter: N. that which deters.

DETERGE, v. *dĕ-tėrj′* [F. *déterger*, to clean a wound—from L. *detergĕrĕ*, to wipe off—from *de*, *tergĕō*, I wipe clean. It. *detergere*]: to cleanse a sore. DETERG′ING, imp. DETERGED′, pp. *-tėrjd′*. DETER′GENT, a. *-tėr′jĕnt* [L. *detergens* or *detergen′tem*]: cleansing: N. that which cleanses. DETER′SIVE, a. *-sĭv* [L. *detersus*, wiped off]: having power to cleanse: N. a medicine which has the power of cleansing sores. DETER′SION, n. *-shŭn*, the act of cleansing, as a sore.

DETERIORATE, v. *dĕ-tē′rĭ-ō-rāt* [mid. L. *detĕrĭōrātus*, made worse—from L. *detĕrĭŏr*, worse: F. *détériorer*, to waste]: to grow worse; to make worse; to reduce in quality; to degenerate. DETE′RIORATING, imp. DETE′RIORATED, pp. DETE′RIORA′TION, n. *-rā′shŭn* [F.—L.]: the state of growing worse; a becoming or making worse.

DETERMINE, v. *dĕ-tėr′mĭn* [F. *déterminer*—from L. *determinārĕ*, to border off; *determĭnātus*, bordered off, bounded—from *de*, *termĭnus*, a boundary or limit: It. *determinare*]: to bound or border off; to end; to fix; to decide; to influence the choice; to resolve; to come to a decision. DETER′MINING, imp. DETER′MINED, pp. *mĭnd:* ADJ. having a settled or fixed purpose; firm; resolute; definite. DETER′MINABLE, a. *-mĭn-ă-bl*, that may be decided with certainty. DETER′MINANT, serving or causing to determine. DETER′MINATOR, n. one who; also DETER′MINER, n. one who. DETER′MINEDLY, ad. *-lĭ*. DETER′MINATE, a. *-āt*, limited; fixed; settled; resolute: V. in *OE.*, to limit; to fix. DETER′-MINATELY, ad. *-lĭ*. DETER′-MINATENESS, n. DETER′MINA′TION, n. *-nā′shŭn* [F.—L.]: the act of determining; firm resolution; fixed purpose; judicial decision; a putting to an end; a too rapid or copious flow of blood to a particular part of the body. DETER′-MINA′TIVE, a. *-nā′tĭv*, that limits or bounds; having the power of directing, limiting, or fixing. DETER′MINISM, n. *-mĭn-ĭzm*, philosophical theory which denies the freedom of the human will, affirming that all seeming volition is actually necessitated, and that 'the act of the soul is itself only a movement of the universal transformation of the dynamical forces of nature' (see FREE-WILL).—SYN. of 'determine': to resolve; limit; bound; finish; shape; regulate; settle; impel; direct; conclude;— of 'determination': decision; judgment; conclusion; purpose; firmness; resolve termination; direction; tendency; resoluteness.

DETERMINANTS.

DETERMINANTS, in Algebra: certain compactly written expressions employed in the theory of equations and its applications to geometry and higher mathematical branches. The determinant symbol consists of a set of numbers arranged in a square with a vertical rule on each side. The numbers are called the *elements* of the determinant. The number of rows (or columns) in the square is the *order* of the determinant. Following is the general determinant of order 4:

$$\begin{vmatrix} a_1 & a_2 & a_3 & a_4 \\ b_1 & b_2 & b_3 & b_4 \\ c_1 & c_2 & c_3 & c_4 \\ d_1 & d_2 & d_3 & d_4 \end{vmatrix}$$

From the n^2 elements of a determinant of order n it is possible to form various products each containing one element from each row and column; for example, for order 4, $a_1b_2c_3d_4$ or $a_3b_2c_4d_1$. There are as many such products as there are ways of assigning the n subscripts $1, 2, \ldots, n$ to the n letters $a, b, c, d, e, \ldots$, viz., $n!$ Each of them receives the sign + or — according to the following rule: credit each term with — for every time that a larger subscript stands in it before a smaller one. Thus the sign to be attached to $a_3b_5c_4d_2e_1$ is $(-)^8$ or +. The expanded value of the determinant is the sum of all the products each taken in the proper sign as just determined. Thus the determinant of order 4 above represents the sum of 24 terms:

$$a_1b_2c_3d_4 - a_1b_2c_4d_3 + a_1b_3c_4d_2 - a_1b_3c_2d_4 + \ldots - a_4b_1c_2d_3 + \ldots + a_4b_3c_2d_1.$$

If a row and a column of a determinant are suppressed, there remains a determinant of the next lower order, called a *minor*. The minor obtained by suppressing for example the row and column which have c_3 in common is denoted by the capital letter C_3, etc., with + or — sign prefixed according as the element in which the suppressed row and column intersect is an even or an odd number of places above or below the principal diagonal, $a_1b_2c_3\ldots$. Thus the minors corresponding to a_1, b_3, c_2, are A_1, $-B_3$, $-C_2$. A determinant may be expanded by multiplying each element of any row or column by the corresponding minor and adding the results, taking the terms alternately + and —. Thus the general determinant of order n is equal to $a_1A_1 + a_2A_2 + a_3A_3 + \ldots + a_nA_n$, or to $b_1B_1 + b_2B_2 + b_3B_3 + \ldots + b_nB_n$, etc.

Whenever two rows, or two columns, are interchanged the corresponding minors change their signs, and therefore the determinant changes sign. Now if the two rows, or columns, are identically the same, their interchange cannot affect the value of the determinant. It follows that *a determinant in which two rows or columns are identically the same is equal to* 0. If all the elements of a row or column are multiplied by any number, the determinant is multiplied

by the same number. Hence if the elements of two rows or columns are *proportional*, the determinant is 0.

If each element of a row or column, for example the first row, is the sum of two terms: $a_1 = a_1' + a_1''$, $a_2' = a_2' + a_2''$, ..., the determinant is the sum of the two determinants which have for their first rows a_1', a_2' .... and a_1'', a_2'', .. while their other rows are the same as in the original. Now if a_1'', a_2'' .... are the same as one of the other rows of the original, the second determinant in the sum is 0, so that in the original the first row may be replaced by a_1', a_2', ... without affecting the value of the determinant. Hence in any determinant *any row or column, or any multiple of a row or column may be subtracted from any other row or column without changing the value of the determinant.* This facilitates the evaluation of a determinant, since it enables us to reduce to 0 all the elements but one in any row or column. Thus:

$$\begin{vmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 3 & 2 & 1 \end{vmatrix} = \begin{vmatrix} 1 & 2 & 3 \\ 0 & -1 & -5 \\ 0 & -4 & -8 \end{vmatrix} = \begin{vmatrix} -1 & -5 \\ -4 & -8 \end{vmatrix} = \begin{vmatrix} -1 & -5 \\ 0 & 12 \end{vmatrix} = -12.$$

Recurring to the expansions $a_1A_1 + a_2A_2 + \ldots$, etc., in terms of the minors, it will be seen that if the minors corresponding to any row or column are multiplied by the elements of *another* row or column, and the sum taken, this amounts to expanding a determinant with two equal rows or columns. Hence, for example, we must have $a_1B_1 + a_2B_2 + \ldots = 0$.

Determinants are employed especially in the solution of equations of the first degree. The process is readily shown by an example. Given three equations:

$$\begin{aligned} a_1x + a_2y + a_3z + a_4 &= 0, \\ b_1x + b_2y + b_3z + b_4 &= 0, \\ c_1x + c_2y + c_3z + c_4 &= 0, \end{aligned}$$

between three unknowns x, y, z, the coefficients a, b, c, form a determinant whose value is $\Delta = a_1A_1 + b_1B_1 + c_1C_1$, while $a_2A_1 + b_2B_1 + c_2C_1 = a_3A_1 + b_3B_1 + c_3C_1 = 0$, as shown above. If then we multiply the three given equations by A_1, B_1, C_1, respectively and add the results we obtain:

$$\Delta x + a_4A_1 + b_4B_1 + c_4C_1 = 0 \therefore x = -(a_4A_1 + b_4B_1 + c_4C_1) \div \Delta$$

Similarly

$$y = -(a_4A_2 + b_4B_2 + c_4C_2) \div \Delta, \; z = -(a_4A_3 + b_4B_3 + c_4C_3) \div \Delta.$$

In the preceding discussion, if the terms a_4, b_4, c_4 are 0, the solutions for x, y, z will all be equal to 0, unless $\Delta = 0$. This last condition $\Delta = 0$ is therefore necessary in order that three homogeneous equations $a_1x + a_2y + a_3z = 0$, $b_1x + b_2y + b_3z = 0$, $c_1x + c_2y + c_3z = 0$ may have a set of solutions different from the obvious $x = y = z = 0$. If we divide the equations through by z and put x' for x/z and y' for y/z, then if $\Delta = 0$, the three equations $a_1x' + a_2y' + a_3 = 0$, $b_1x' + b_2y' + b_3 = 0$, $c_1x' + c_2y' + c_3 = 0$ are *consistent*, i. e., they are

satisfied by a same pair of values of x' and y'. In general $n+1$ equations

$$a_1x_1+a_2x_2+\ldots.+a_nx_n+a_{n+1}=0,$$
$$b_1x_1+b_2x_2+\ldots.+b_nx_n+b_{n+1}=0,$$
$$\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

between n unknown $x_1, x_2, \ldots., x_n$ are consistent if and only if the determinant of the coefficients $a_1, a_2, \ldots. a_{n+1}$; $b_1, b_2, \ldots. b_{n+1}$; etc., is 0. And under the same condition the n+1 *homogeneous* equations

$$a_1x_1+a_2x_2+\ldots.+a_nx_n+a_{n+1}x_{n+1}=0,$$
$$b_1x_1+b_2x_2+\ldots.+b_nx_n+b_{n+1}x_{n+1}=0,$$
$$\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

have solutions for $x_1, x_2, \ldots., x_{n+1}$ not all equal to 0.

A determinant in which elements symmetrically situated with respect to the principal diagonal are equal is called a *symmetric* determinant. If such elements are equal with opposite signs, in which case the principal diagonal elements are all 0, the determinant is *skew symmetric.* A skew symmetric determinant of *odd* order is always equal to 0, and one of even order is a perfect square. Many special kinds of determinants occur in Geometry and in the theory of Invariants (q. v.). A very simple case is that of the quantity

$$\begin{vmatrix} a & b \\ b & c \end{vmatrix} = ac-b^2$$

which occurs under the square root sign in the solution of the quadratic equation $ax^2+2bx+c=0$. Another is the *discriminant*

$$\begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{12} & a_{22} & a_{23} \\ a_{13} & a_{23} & a_{33} \end{vmatrix}$$

of the general conic section $a_{11}x^2+2a_{12}xy+a_{22}y^2+2a_{13}x+2a_{23}y+a_{33}=0$; the vanishing of this determinant is the criterion for the case where the conic breaks up into two straight lines.

The product of two determinants may be itself written as a determinant. In particular the square of a determinant is a symmetric determinant of the same order. For the details any standard text book may be consulted.

A set of numbers arranged in the form of a rectangle is called a *matrix.* From a matrix a number of determinants may be formed by suppressing rows or columns, or both. Here also reference must be made to the treatises.

The history of determinants may be traced back to Leibniz (1693). The name 'determinant' was introduced by Gauss. The theory proper begins with Cauchy and Jacobi. The great developments of the subject are linked with the names of Sylvester and Cayley. The theory of determinants is the foundation of the theory of Invariants. Elementary treatments of the subject are now commonly given in the school algebras.

DETERSIVE, DETERSION: see under DETERGE.

DETEST, v. *dĕ-tĕst'* [F. *détester*—from L. *detestārī*, to call earnestly to witness, to abominate—from *de*, *testor*, I bear witness: It. *detestare—lit.*, to invoke a deity as a witness against]: to abhor; to hate extremely; to abominate. DETES'TING, imp. DETES'TED, pp.: ADJ. hated extremely. DETES'TER, n. one who. DETES'TABLE, a. *-tă-bl* [F.—L.]: abominable; extremely hateful. DETES'TABLY, ad. *-blĭ*. DETES'TABLENESS, n. *-bl-nĕs*, the quality of being detestable; extreme hatefulness. DETESTATION, n. *dē'tĕs-tā'shŭn* [F.—L.]: abhorrence; extreme hatred.—SYN. of 'detest': to loathe; hate; execrate; condemn;—of 'detestable': odious; execrable; abhorred.

DETHRONE, v. *dĕ-thrōn'* [OF. *desthroner*, to unthrone —from OF. *des* for L. *dis*, apart—from L. *de*, *thrōnus;* Gr. thronos, a royal seat]: to drive from a throne; to divest of supreme power. DETHRO'NING, imp. DETHRONED', pp. *-thrōnd'*. DETHRO'NER, n. one who. DETHRONE'MENT, n. *-mĕnt*, the removal from a throne; deposition from regal power.

DETINUE, n. *dĕt'ĭ-nū* [F. *détenu*, held back—from *détenir*, to hold back, to withhold—from L. *detinĕō*, I keep back]: in *law*, action or writ against a person for recovery of goods wrongfully detained in his possession, or of their value, with damages and costs. The action is for the recovery of a specific article; the goods detained must, therefore, be of such a character that they can be distinguished from others, as a horse or money in a bag. There must actually be a title of property in the plaintiff at the time he brings his action; but property without possession is sufficient, and an heir can thus bring his action for an heir-loom that never has been in his possession. This action was formerly subject to *Wager of Law* (q.v.), now abolished, whereby the defendant was allowed to clear himself by his own oath, supported by that of eleven neighbors. This proceeding rendered the action of detinue so inconvenient, that, by a fiction of law, remedy for wrongful detention was most frequently sought by the action of *Trover* (q.v.).

DETMOLD, *dĕt'mōld*, Ger. *dĕt'mŏlt:* town of n.w. Germany, on the Werre, cap. of the principality of Lippe-Detmold, 47 m. s.w. of Hanover. It consists of an old and new town, the latter of which is well built, and adorned with public walks and gardens. The chief buildings are the palace, a fine old castellated edifice, the gymnasium, and the theatre. Detmold has also a training school, public library, and hospital. The manufactures are leather, woolens, and linens. There are several breweries. On the Grotenburg, about 2 m. from Detmold, is a colossal copper statue of Hermann (q.v.). Pop. (1900) 11,968.

DETONATE, v. *dĕt'ō-nāt* [L. *detonātus*, thundered down—from *de*, *tono*, I thunder: F. *détoner*]: to cause to explode with a sudden report; to burn with a loud noise. DET'ONA'TING, imp. DET'ONA'TED, pp. DET'ONA'TION,

n. *-nā-shŭn* [F.—L.]: the phenomenon of combustion with explosive rapidity, accompanied by sound and light; e.g., the firing of gunpowder, gun-cotton, and fulminating-powders. DETONATOR, n. *dĕt'ō-nā'tər*, that which explodes with a sudden report; a gun fired with a percussion-cap.

DETORTION, n. *dĕ-tŏr'shŭn* [L. *detorsus*, turned or bent aside—from *de*, *torsus*, twisted]: a turning or wresting; perversion from the true meaning.

DETOUR, n. *dĕ-tôr'* [F.]: a roundabout; a circuitous way.

DETRACT, v. *dĕ-trăkt'* [F. *détracter*—from L. *detractus*, taken away—from *de*, *tractus*, drawn—*lit.*, to take or draw away]: to lessen reputation by calumny; to damage character by speaking evil of; to disparage; to traduce. DETRAC'TING, imp.: ADJ. having a tendency to detract. DETRAC'TED, pp. DETRAC'TOR, or DETRAC'TER, n. *-tər*, one who. DETRAC'TION, n. *-trăk'shŭn* [F.—L.]: the depreciating of the reputation of another from envy, malice, or other motive; a lessening of worth; censure; slander—also DETRACTA'TION, n. *-tā'shŭn*. DETRAC'TIVE, a. *-tĭv*, having the tendency to lessen worth or estimation. DETRAC'TINGLY, ad. *-lĭ*. DETRACTORY, a. *dĕ-trăk'tər-ĭ*, tending to lessen the worth or estimation in which a person or thing is held.—SYN. of 'detract': to derogate; defame; slander; abuse; asperse; depreciate; decry; calumniate; vilify;—of 'detraction': calumny; disparagement; depreciation; derogation; aspersion; censure.

DETRIMENT, n. *dĕt'rĭ-mĕnt* [F. *détriment*—from L. *detrimen' tum*, loss—from *de*, *trītus*, worn or rubbed: It. *detrimento*]: damage; loss; injury; disadvantage; diminution. DET'RIMEN'TAL. a. *-tăl*, injurious; hurtful; pernicious.—SYN. of 'detriment': disadvantage; prejudice; mischief; harm; hurt; injustice; wrong.

DETRITUS, n. *dĕ-trī'tŭs* [L. *detrītus*, worn]: any accumulation of earth, sand, gravel, clay, and fragments of rock, formed by the wearing away and disintegration of rocks; *debris* consists of masses of rock, gravel, sand, trees, animal remains, etc., having the same meaning with the word *rubbish*. DETRI'TAL, a. *-trī'tăl*, composed of detritus. DETRITAL ROCKS, n. plu. rocks that appear to have been derived from the detritus of preëxisting solid mineral matter. DETRIT'ION, n. *-trĭsh'ŭn*, the act of wearing away.

DE TROBRIAND, *dė trō-brē-âng*, PHILIPPE REGIS, Baron: American soldier: b. Tours, France, 1816, June 4; d. Bayport, Long Island, 1897, July 15. He was educated at the University of Orleans, studied law at Poitiers, and came to the United States in 1841. He was commissioned colonel of the 54th Volunteers in the Civil War 1861; and was appointed brevet brigadier-general in 1867. He was editor and publisher of the *Revue du Nouveau-monde*, New York, 1849-50, and joint editor of the *Courier des Etats Unis* 1854-61. Among his works are: *Les Gentilshommes de l'Ouest* (1841); *Quatre ans de campagnes a l'Armee du Poiomac* (1867).

DETROIT.

DETROIT, *de troyt'*, Michigan, city, port of entry metropolis of the state and capital of Wayne co.; on the n.w. bank of the Detroit river, 6 miles below Lake St. Clair and 14 from Lake Erie. It is 88 m. from Lansing, the state capital; 284 from Chicago, and 251 from Buffalo. The name signifies 'strait,' and D. is often called 'the City of the Straits.' It has the finest harbor on the lakes, and has been called the 'Dardanelles of America.' The broad outlet of Lake St. Clair, fed by the Great Lakes, always has a full stream, neither rising nor sinking but little, and rarely disturbed by storms. Its depth is sufficient to permit the largest vessels to lie up against the wharves. The area of the city is about 29½ sq. m., with numerous well-built suburbs not yet incorporated. The whole river front for 20 m. is built up with handsome villages, and lined with the summer villas of its wealthy business men, all really part of Detroit. At its southern corner, commanding the channel, is Fort Wayne, an unfinished military post once intended to be the most formidable fortification in the Northwest, and still garrisoned and armed with batteries. Across the river in Canada are Windsor in the centre, the terminal of railroads through Canada, Walkerville on the north and Sandwich on the south.

History.—The site of D. was visited by the French 1610, and permanently settled by French colonists under De la Motte Cadillac 1701, when Fort Ponchartrain was built as a defense against Indians. Owing to its great strategic importance, it has never been without a military garrison since 1701. It has changed its flag 5 times; was at times under French and English dominion prior to the Revolutionary war; has owed allegiance to 3 different sovereigns; has been besieged by Indians twice, captured in war once, totally consumed by fire once, and has been the scene of 12 massacres and 50 battles. The English took possession of it 1763, and erected (1778) Fort Shelby, first called Fort Lernault, the site of which is now in the heart of the city. It was ceded to the United States by the peace of 1783, but possession was not taken till Gen. Arthur St. Clair established himself there, 1796; Gen. Hull surrendered it to the British 1812, on threat of a general massacre by the Indians, an act for which he was afterward court-martialed and sentenced to death, though the sentence was never executed; the Americans regained possession after Com. Perry's victory on Lake Erie, 1813. The present city was laid out 1807, incorporated as a village 1815, was the capital of Mich. during its entire territorial existence, was chartered as a city 1824, and was the capital of the state 1837-47, when the town of Lansing was selected as the permanent seat of govt.

The ground of Detroit is a gentle slope for 300 or 400

ft. back from the river to 20 or 30 ft. high; then sinks slightly, and again rises to about 50 ft., and 661 above the sea. The original plan, on a very small scale, was a series of concentric semicircles, or rather segments of polygons, with the Grand Circus—a semi-circular park of 5½ acres—as a centre, nearly a mile from the river, toward which they extended. This feature is still preserved; but all the new growth has been laid out in checkerboard system, relieved by a series of noble avenues 100 to 200 ft. wide radiating from the river. The streets are generally wide—50 to 100 ft.—well shaded, and notably clean; some 300 miles of them are paved with brick and asphalt. The chief business street is Woodward avenue. Jefferson avenue is another leading one; Griswold street, with the great banking houses, the custom-house, office buildings, etc., is the Wall street of Detroit; and others about the Campus Martius are of importance. The chief of the show streets is the Grand Boulevard, a macadamized parkway 150 ft. wide and 11 m. long, encircling the heart of the city in a vast sweep from Belle Isle bridge at the east to Fort street near the western boundary. The outer portions of all the great avenues mentioned, of Lafayette avenue, and of Fort street, are full of fine residences; and a notable residence district clusters around Woodward avenue as it stretches toward Palmer Park.

Public Buildings and Monuments.—The chief of these are on or near the Campus Martius. Within it, facing the city hall, is the Michigan Soldiers' and Sailors' Monument, by Randolph Rogers, of bronze and granite, 55 ft. high, with a colossal bronze allegorical statue of Michigan on the summit; it cost $75,000. On the west, facing four streets, is the city hall, three stories and mansard, of sandstone in the Italian style; 200 x 90 ft., 66 ft. high to top of cornice, 180 to top of tower; it cost $600,000, and is one of the finest in the West. Near by are the handsome Wayne county court-house, the largest public building in the city, and the splendid Majestic office building. On the north of the Campus is the Detroit Opera House. The custom-house occupies the old post-office, on Griswold street, and the magnificent new post-office is on Fort street, west of the city hall. The Chamber of Commerce, the Athletic Club, and Y. M. C. A. buildings, the House of Correction, and the magnificent passenger stations—the Michigan Central, and the new Union station at Fort and Third—are all conspicuous. The churches will be mentioned later.

Public Service and Improvements, etc.—The city is exceedingly well sewered and its death rate is very low—12.03 per 1,000 in 1901. The water supply is taken from a crib in Lake St. Clair, 1,500 ft. out, at a depth of 46 ft.; the system has over 600 miles of pipes and has cost above $6,000,000. It is supported partly by

rates, and partly by a city tax. The electric lights are partly are lights on high towers; there are about 1,800 in all. The electric railway system has over 200 miles of track within the city limits, and over 300 in surburban lines outside to every quarter; and ferries run to Windsor and Walkerville in Canada. There is a bridge over the American half to Belle Isle, but none over the full stream. There are 3 railway passenger stations—the Union, the Michigan Central, and the Brush street, all on the water front not far apart.

Parks, Pleasure Resorts, Public Amusements, etc.—Detroit has 21 public parks; besides a number of small triangular squares caused by the intersection of the radiating avenues with the streets, often with fountains. The largest and the principal public resort, is Belle Isle in the river, whose entire 707 acres have been parked with great beauty at a cost of over $1,500,000, including a little ring of lakes and canals. It is reached by a handsome iron bridge built in 1889, at a cost of $315,000; and is to be increased 100 acres by taking in the southwestern shoals. The next largest is Palmer Park, of 141 acres, on Woodward avenue, about 6½ miles from the river, sedulously made a colonial museum; it has a colonial log house, and a most interesting collection of colonial and other historical relics, besides a colonial casino. Clark Park in the west has about 25 acres; Voigt Park, 8½; and the Grand Circus, in each of whose quadrants made by Woodward avenue there is a fountain, 5½ acres. Besides these, there are opportunities for delightful summer trips on the river and lakes; and the river is dotted with charming places where excursion steamers run, from Grosse Pointe, on Lake St. Clair, famed for its cherry orchards, to Grosse Isle where Lake Erie opens. There are 9 theatres and opera houses in the city, the largest of which are the Detroit and Whitney's opera houses, and the Lyceum. The finest cemeteries are Elmwood (Protestant) and Mt. Elliott (Catholic) side by side on the northeast, about 2 m. from the centre, beautiful in keeping and monuments; and Woodmere, some 4 m. to the southwest on high ground, is another beautiful one. Woodlawn, a new and beautiful cemetery just opened, situated 7 m. out Woodward avenue, and Mt. Olivet, another large (Catholic) cemetery about 7 m. out at the northeast. There are a number of Lutheran and Jewish cemeteries.

Schools, Libraries, Newspapers, etc.—In 1902 the public school system had 72 buildings, 66 brick and 6 wood, besides a central office building; and 3 high schools. There are, in addition to the above, 56 private schools in the city. Total number of teachers employed, 1,288; total number of children of school age, 83,215; total number of children attending school, 51,554; and the expenditures were $1,286,708. There is no Protestant or non-sectarian institution for general higher education, the University of Michigan at Ann Arbor being

only 37 m. away; but the Jesuits have Detroit College, opened 1877. There are also several special professional colleges; 3 medical, including the Detroit College of Medicine, with schools of pharmacy and dentistry, and Michigan College of Medicine and Surgery, Detroit Homeopathic College, and the Detroit College of Law. There are 82 periodicals, including 7 dailies, 2 of which are German. The one great library is the Detroit Public Library, opened 1865, containing nearly 200,000 volumes, and with branches in each high school as well as several outside. The Hurlbut Library at the waterworks is also utilized as a distributing station. The Bar Association has a law library; and the Masonic lodges, the Trades Union Council, and the Museum of Art also have libraries. The latter institution, in part supported by a city tax, has a good collection of historical and archæological, art, and scientific relics and examples, valued at $300,000. These include the Stearn's Oriental collection, one of the finest in the country, and the Scripps gallery of old masters.

Commerce and Industries.—Detroit is a highway through which passes all the commerce between the upper and lower lakes, to the volume of probably 50,000,000 tons yearly, or more than double that of the Suez Canal. It is the terminus of a great number of lake steamer lines, freight and passenger, and a chief calling point for others; and one of the greatest distributing points both by boat and rail between the United States and Canada, with which it does three-fourths of its 'foreign' trade. In 1902 its exports were $18,053,055, greatest of all the ports opposite Canada; and its imports $3,469,077. Of the really foreign trade, extra-continental, the greater part is to England. The exports are grain and flour, swine and their products, cattle, beef, and hides, sheep and wool, and lumber; though the latter trade has greatly declined of late years, as the Michigan pine forests have been stripped. Besides this, it receives and uses or ships east, vast quantities of the produce of Michigan, of which it is the natural emporium; wheat, corn, and barley, hops, apples, dairy products, etc. Its annual clearances of vessels are about 3,300 with a gross tonnage of over 500,000. It has the largest dry-dock on the lakes. Besides the water lines, it is the centre of 7 great railroad lines, most of them among the chief trunk lines in the West and Canada; the Lake Shore, Michigan Central, Grand Trunk, Canadian Pacific, Père Marquette, Wabash, and Detroit Southern.

The manufactures of Detroit in 1900 turned out $100,892,838 in finished product, employing $71,751,193 of capital and over 51,000 workmen and officials, and paying nearly $24,000,000 in wages and salaries. The greatest single item was in foundry and machine-shop products, $8,943,311; but if we add the allied industry of making the iron and steel itself—over $3,000,000—the

steamfittings and heating apparatus, and the architectural ironwork, the general iron and steel manufacture will come up to nearly $15,000,000. Next to this is the manufacture of tobacco products, amounting to over $6,500,000. Manufacturing chemicals and druggists' products is the third immense specialty, $4,915,913, the creation of the past 20 years almost wholly. Malt liquors come next. Furniture and carriages, using more skilled work to less stock, have largely supplanted the coarse lumber and planing-mill work, once a chief industry. Brass castings are a heavy item; slaughtering and meat packing is important; and paints and varnishes occupy a prominent position.

Government, Finance and Judiciary.—The city is divided into 17 wards. The city council has but one chamber, and the council and the mayor are elected for two years. Most of the officials and commissions are elected; some are appointed by the council on the mayor's nomination; and the board of health is appointed by the governor of the state. The finances are regulated by a board of estimates. The city is the seat of the United States circuit court for the sixth circuit, the district court for the eastern district of Michigan, the Wayne county circuit court, and local courts. The principal officials of the Lake Survey and the department in charge of the lake lighthouses have their offices here. The city's limit of borrowing is 2 per cent. of its assessed valuation, which was about $250,000,000 in 1902. The tax rate was 2.13, and the amount raised $5,822,819.44. The net debt was $3,563,-908.74. The banks of the city on July 15, 1901, consisted of 8 national, 14 savings banks, 2 trust companies, and 2 private banks. The joint-stock banks, reported $96,553,247 resources, $7,850,000 capital, $2,076,000 surplus, and $80,221,322 deposits.

Churches and Charities.—In 1902 there were 200 religious societies in Detroit. The chief denominations were Roman Catholic (36 churches including the cathedral, the seat of a bishop), Methodist Episcopal (29), Lutheran (26 of different synods), Baptist (18), Presbyterian (15), German Evangelical (11), Congregational (10). There were also 5 Jewish synagogues and a temple; and several Catholic convents.

The charities include a city poor fund, managed by a Commission; and the Detroit Associated Charities. There are 4 large general hospitals, of which the most noted are Grace and Harper, with training schools for nurses; St. Mary's (Catholic) and the United States Marine Hospital. Besides these are some two dozen allied institutions—lying-in hospitals, homes for Magdalens, foundlings, and orphans, the aged, etc. The House of Correction, whose buildings, grounds, and appliances have cost some $600,000, is of world-wide note. Pop. (1910) 465,766.

DETROIT RIVER: a strait through which the waters of Lakes Superior, Huron, Michigan, and St. Clair are discharged into Lake Erie; about 25 m. long and ½–4 m. wide; forming part of the boundary between the United States and Canada. Its course from Lake St. Clair is a little s. of w. to Detroit, where it curves and begins to flow more directly s. About 5 m. below Detroit it is divided into two channels by Grand Turkey Island, attains its extreme width, and thence maintains it to Lake Erie. From Mich. it receives the Rouge river, 1 m. above Grand Turkey Island, and the Huron, at its mouth in the lake; and from Canada, the Canard river, 3½ m. above Amherstburg. The principal places on the river are Detroit and Brownstown, in Mich., and Windsor, Sandwich, and Amherstburg, in Canada. The river has been greatly improved, and is now navigable by the largest vessels, and accommodates an enormous lake tonnage. See DETROIT.

DE TROP, phrase, *dĕh trō* [F., too much, too many]: in the way; not wanted; applied to a person whose company is inconvenient or not wanted: one too many.

DETROYAT, PIERRE LÈONCE: 1829, Sep. 7—1898, Jan. 18: naval officer; b. Bayonne, France. He entered the navy 1845; served in the Crimean war and the expeditions to China and Mexico; was selected to escort ex-Empress Carlotta to Austria; and, incurring the displeasure of the French govt. by his severe criticism of Bazaine's operations in Mexico, resigned his commission and engaged in journalism. He published a number of historical works, of which the best known is *The French Intervention in Mexico* (1868).

DETRUDE, v. *dĕ-trōd'* [L. *detrūdĕrĕ*, to thrust or push down—from *de*, *trūdo*, I thrust: It. *detrudere*]: to thrust down; to push down with force. DETRU'DING, imp. DETRU'DED, pp. DETRU'SION, n. *-zhŭn* [L. *detrūsus*, thrust or pushed]: a thrusting or forcing down.

DETRUNCATE, v. *dĕ-trŭng'kāt* [L. *detruncātus*, lopped or cut off—from *de*, *trunco*, I cut or lop off: It. *detroncare*]: to lop or cut off; to shorten by cutting. DETRUN'CATING, imp. DETRUN'CATED, pp. DETRUNCATION, n. *dē'trŭng-kā'shŭn*, the act of cutting or lopping off abruptly.

DETTINGEN, *dĕt'tĭng-ĕn*, BATTLE OF: in the Austrian wars of succession; 1743, June 27. Dettingen is a village of Bavaria, Lower Franconia, on the right bank of the Main. Here George II. (q.v.) of England, commanding abt. 37,000 English and Hanoverians, defeated the French army, abt. 60,000, under the Duke de Noailles. This was the last time a king of England took the field in person.

DETVA, *dĕt'vŏ:* town in the n.w. of Hungary, in a deep valley, 20 m. e. of Altsohl. Pop. about 15,000.

DEUCALION, n. *dū-kā'lĭ-ŏn:* in *Gr. myth.*, a king in Thessaly, son of Prometheus (q.v.), and husband of Pyrrha. When Zeus had resolved to destroy the race of men by a flood, D. built an ark or ship. The flood came. D. floated about for nine days, and on the subsidence of the waters, the ark rested on Mount Parnassus. To repeople the world, D. and Pyrrha were told by the goddess Themis to throw

behind them the bones of their mother. Understanding by this the stones of the earth, they obeyed the injunction, and from those thrown by D. sprang up men, and from those by Pyrrha, women. The myth, a comparatively late one, not alluded to by Homer or Hesiod, is no longer deemed by scholars to be a corrupted tradition of the Noachian deluge.

DEUCE, n. *dūs* [OF *deus* or *dous;* F. *deux*, two—from mid. L. *duos* for *duo*, two: Ger. *daus*, deuce]: in *gaming*, a two; a card or die with two spots.

DEUCE, or DEUSE, n. *dūs* [*Dusĭŭs*, the name of a Gallic demon: Low Ger. *duks* or *duus*, the deuce: comp. Gael. *duis*, gloom]: a euphemism for the devil; a demon; an evil spirit. DEUCED, a. *dū'sĕd*, excessive: extreme: AD. excessively; extremely. DEU'CEDLY, ad. *-lĭ*. *Note.*—Skeat says that DEUCE is merely an old Norman oath, vulgarized: OF. *Deus*, O God! Dut. *deus*, the deuce.

DEUS EX MACHINA, *dē'ŭs ĕxs măk'ĭ-na:* an expression borrowed from the classical theatre. In conformity with the popular mythological beliefs of their age, the tragic poets of Greece, instead of bringing about the dénouement of their plots by natural means, had often recourse to a more expeditious mode—viz., the intervention of a god, who descended in a machine, and abruptly solved whatever difficulty barred the proper termination of the piece. As examples of the *Deus ex Machina*, take the appearance of Hercules in the *Philoctetes* and of Diana in the *Iphgienia in Tauris*. In modern tragedy, when a person or incident is introduced arbitrarily, *forced*, as it were, into the conduct of a plot, merely to remedy some inartistic negligence in its construction, or to save the author the labor of further ingenuity, such a contrivance is metaphorically called a *Deus ex Machina*. In modern comedy, the rich old uncle who suddenly comes home from the W. Indies, and rescues the young hero and heroine from their dreadful pecuniary embarrassment, serves the same purpose. In philosophy, a needless recourse to a direct and special Divine intervention in accounting for results, has been termed a *Deus ex Machina*.

DEUTERO, *dū'tĕr-ō*, or DEUTO, *dū'tō* [Gr. *deutĕros*, second]: a prefix which indicates the second degree of the word with which it is joined.

DEUTERO-CANONICAL, a *dū-tĕr-ŏ-ka nŏn'ĭk-al:* term applied to those books of Scripture which were admitted as canonical after the rest.

DEUTEROGAMY, n. *dū'tĕr-ŏg'ă-mĭ* [Gr. *deutĕros*, second; *gamos*, marriage]: a second marriage after the death of the first husband or wife. DEU'TEROG'AMIST, n. *-ă-mĭst*, one who.

DEUTEROGENIC, a. *dū'tĕr-ō jĕn'ĭk* [Gr. *deutĕros*, second; *gĕnos*, birth, race]: in *geol.*, applied to those rocks which have been derived from the *protogenic* rocks by mechanical action.

DEUTERONOMY, BOOK OF, *dū'tĕr-ŏn'ŏ-mĭ* [Gr.

deutĕros, second; *nomos*, a law]: last of the books of the Pentateuch, so called from its consisting in part of a restatement of the law as already given in Exodus, Leviticus, and Numbers. It contains also, in addition to special commands and admonitions not previously given, an account of the death of Moses. This book presents the third and latest phase of the development of the Mosaic legislation. Its great aim is to check the encroachments of idolatry, and to concentrate the national worship in the great sanctuary at Jerusalem, especially at the three annual festivals. It is instinct with the prophetic spirit, and lays stress on the great commandment to love and fear God with the whole heart as the sum of the law. It is supposed by many critics that the book of the law found by Hilkiah, the high priest, in the house of the Lord during Josiah's reign (II. Kings xxii. 8-13) consisted of the larger portion of Deuteronomy. It may be divided into (1) four parting addresses of Moses to the Israelites in the plains of Moab, ch. i.-xxx.; (2) the charge to Joshua and to the priests, with the committal of the book of the law to the keeping of the latter, and his song, xxxi.-xxxii. 47; and (3) three appendices, namely, (*a*) announcement to Moses of his approaching death, xxxii. 48-52, (*b*) the poem conveying his blessing on the tribes of Israel, ch. xxxiii., and (*c*) an account of his death, ch. xxxiv. The authorship of this book has been traditionally assigned to Moses, with the exception of the few concluding verses which narrate his death, and which by many of the conservative school of theologians have been ascribed to Ezra. Of late years much critical labor has been bestowed on this and the four other books of the Pentateuch, and the Mosaic authorship of the whole has been both assailed and defended with considerable learning and ability.

DEUTEROSCOPY, n. *dū-tėr-ŏs'ko-pĭ* [Gr. *deutĕros*, second; *skopeō*, I see, I look at]: the second, inner, or hidden meaning of words.

DEUTEROZOOIDS, n. plu. *dūt'ėr-ō-zō'oyds* [Gr. *deutĕros*, second; *zōŏn*, an animal; *eidos*, resemblance]: those zooids which are produced by gemmation from zooids.

DEUTHYDROGURET, n. *dūt-hĭ-drŏg'ū-rĕt*, or DEUTOHYDROG'URET, n. *dū-tō* [Gr. *deutĕros*, second; Eng. *hydroguret*]: compound of two atoms of hydrogen with one of some other element.

DEUTOPLASM, n. *du'tō-plăzm* [Gr. *deutĕros*, second; *plasma*, what has been formed]: in *biol.*, the nutritive or food yolk as distinguished from the germinal or protoplasm.

DEUTOXIDE, n. *dū-tŏks'īd* [Gr. *deutĕros*, second, and *oxide*]: in *chem.*, a substance oxidized in the second degree —now more generally *dioxide*.

DEUTSCH, *doich*, EMANUEL OSCAR MENAHEM: German Orientalist: b. Neisse, Silesia, 1829, Oct. 28; d. Alexandria, Egypt, 1873, May 12. His education was obtained at the

University of Berlin and in 1855 he went to England to fill an appointment in the library of the British Museum, where for 15 years he studied and wrote He is best known by his brilliant article on the *Talmud* in the *Quarterly review* (1867), to which he also contributed an article on *Islam* (1869). He was a valued contributor to the first edition of Chambers' *Encyclopædia,* for which he wrote nearly 200 articles. A volume of his *Literary Remains* with sketch of his life was published in 1874.

DEUTZIA, *doyĭ'zĭ-a:* genus of shrubs of the nat. ord. *Philadelphaceæ;* natives of the n. of India, China, and Japan. Some are favorite greenhouse plants in Britain and America. They produce abundance of beautiful white flowers.

DEUX-PONTS, *dĕh-põüg'* (Ger. *Zweibrücken*): town of Rhenish Bavaria, on the Erbach, near the Lorraine frontier. Deux-Ponts owes its name to its two bridges. Its ancient ducal palace is now used as a court-house. The Latin form of Deux-Ponts was Bipontium; whence the name Bipontine given to the edition of Greek and Latin classics here printed by a society of scholars in 1779. Pop. (1880) 10,382; (1890) 11,204.

DEV, *dāv,* or DEW (Persian), also DEVA, *dāv'a* (Sanskrit): in Persian, race of demons created by Ahriman and doing his bidding; in Sanskrit, the gods of Hindu mythology.

DEVAPRAYAGA, *dā-vâ-prī-â'gâ* (better *Deoprayag*): town in the dist. of Guhwal, N. W. Provinces of India; in the fork of the Alaknanda and the Bhagiraths, which join to form the Ganges (q.v.). It is 313 ft. above the rivers, and 2,266 ft. above the sea. As in one sense the source of the sacred river Ganges, Devaprayaga is a favorite place of pilgrimage for the Hindus. Its only permanent pop. consists of abt. 1,000 Brahmins from the Deccan. The town was shattered by earthquake, 1803, and was repaired by Scindia, Mahratta chief of Gwalior.

DEVASTATE, v. *dĕv'ăs-tāt* [L., *devastātus,* laid waste—from *de, vasto,* I lay waste: It. *devastare:* F. *dévaster*]: to lay waste; to ravage; to destroy. DEV'ASTATING, imp. DEV'ASTATED, pp. DEV'ASTA'TION, n. *-tā'shŭn* [F.—L.]: the act of laying waste; state of being laid waste; havoc; destruction, as by armies, floods, etc.—SYN. of 'devastate': to desolate; waste; pillage; plunder; demolish; ruin; overthrow.

DEVASTAVIT, n. *dē-văs-tā'vit* [L. he has wasted]: in *law.,* a writ which lies against an executor or administrator, who wastes or misapplies the goods of a deceased person.

DEVELOP, v. *dĕ-vĕl'ŏp* [F. *développer,* to unfold]: to unfold; to lay open; to disclose; to unravel; in *algebra,* to bring out in full the operations set forth in symbols: in the geometry of curved surfaces, to produce on a plane a surface equivalent. DEVEL'OPING, imp. DEVEL'OPED, pp.

-ōpt. DEVEL'OPMENT, n. *-ŏp-mĕnt*, an unfolding; an unravelling; disclosure. DEVEL'OPMEN'TAL, a. connected with or formed by development. DEVELOPMENT, in Photography: see PHOTOGRAPHY.—SYN. of 'develop': to uncover; lay open; disclose; exhibit; disentangle; detect.

DEVELOPMENT, in biology: when joined with the word theory development has often been used as a synonym for the term evolution, to denote the slow and gradual process by which, according to natural laws, animals and plants have passed from lower and simpler forms to higher and more specialized organisms. According to this theory, species were not each of them a separate creation, but by some process or other came from previous species, the only exception, if any, in existence, being one or more primordial forms. By a similar process arose also the greater differences of structure which distinguish genera, families, orders, classes, and even higher groups. See CREATIONISM; DARWINIAN THEORY; DESCENT OF MAN; EVOLUTION; SPECIES; etc.

When used alone the word is employed to signify the successive and more rapid changes which plants and animals undergo in passing from the embryo to the adult stage of individual life. The changes taking place in the egg, or in the fœtus within the body of the parent, are described under EMBRYOLOGY (q.v.). After leaving the egg stage, or having been separated from the body of its parent, the animal is either complete in its organization, like the parent, or it passes through successive larval stages before it reaches the perfect form of adult life. A remarkable fact about the larval stages is that the organs are adapted to the necessities of each change in the development, so that the young may live to perpetuate the species, even though the parents die. Familiar illustrations of these transformations are recognized in the youthful period of butterflies and bees. But there are lower grades of animal life, in which the metamorphoses of the young are no less striking. For example among the *Cirripeds* (curly-hair-footed), or barnacles, the adult is covered with a head-like shell, within which are contained the organs—the digestive apparatus, the double eye, and the numerous feet; and is attached to rocks, bottoms of ships, etc. But after the hatching of the embryo, the larva, floating in the water, has but three pairs of feet, a pair of horns, a single eye, and a shield covering the back. This is known as the *nauplius* stage. After several moults, each accompanied by a change of structure, it enters the *Cypris* stage. The bivalve shell replaces the larval shield, and seven pairs of appendages are added. This free-swimming stage is of short duration, and the animal fastens itself to some fixed object or to a vessel.

DEV'ENS, CHARLES; American jurist and general: b. Charlestown, Mass., 1820, April 4; d. Boston, Mass, 1891, Jan. 7. He was educated at Harvard, and was United States marshal for the district of Massachusetts at the time when the case of Thomas Sims, a fugitive slave,

attracted widespread attention. Devens delivered Sims to his master in accordance with the law, and afterward tried to purchase his freedom, but did not succeed till after the outbreak of the Civil War. He served in the Union army from 1861 to 1865, retiring with the full rank of brigadier-general and the brevet rank of major-general. In 1873 he was made associate justice of the Massachusetts supreme court; in 1877 became attorney-general of the United States; and in 1881 resumed his place on the Supreme bench of his native state.

DEVENTER, *dĕv'ĕn-tėr* or *dā'vĕn-tėr* (often called DEMTER): fortified town of Holland, province of Overyssel; on the Yssel, abt. 55 m. e.s.e. of Amsterdam. The principal buildings, beside the cathedral, in the early Gothic, are the town-house, the court-house, and prison. Tower-flanked walls surround the town; also a broad deep ditch. The industry of Deventer consists in iron-founding, the manufacture of carpets, stockings, cotton, glue, etc. Its ginger-bread (called *Deventer Koek*) gives employment to several factories. There is also trade in grain, cattle, linen, ham, and butter. Pop. 23,220.

DE VERE, *de-vēr*, Sir AUBREY HUNT; Irish poet: b. Curragh Chase, Ire., 1788, Aug. 28; d. there 1840, July 5. His works are: *Julian the Apostate: a Dramatic Poem* (1822); *The Duke of Mercia; an Historical Drama* the volume containing also *The Lamentations of Ireland* (1823); *The Song of Faith, Devout Exercises, and Sonnets* (1842); *and Mary Tudor an Historical Drama*, published posthumously (1847). His sonnets Wordsworth declared to be the 'most perfect of our age.'

DE VERE, AUBREY THOMAS: Irish poet and essayist: b. Curragh Chase, Ireland, 1814, Jan 10; d. there 1902, Jan. 21. He was a son of Sir Aubrey De Vere (q.v.), and became a Roman Catholic in 1851. In 1842 his first volume of verse appeared, *The Waldenses* and *The Search after Proserpine* (1843). His subsequent books of verse include: *Poems, Miscellaneous and Sacred* (1853); *May Carols* (1857) *The Sisters* (1861); *The Infant Bridal* (1864); *Irish Odes* (1869); *The Legends of St. Patrick* (1872); *Alexander the Great* (1874); *Legends of the Saxon Saints* (1879); *The Foray of Queen Meave, and other Legends of Ireland's Heroic Age* (1882); *Legends and Records of the Church and* the *Empire* (1887); and *St. Peter's Chains* (1888). Among his prose works are: *English Misrule and Irish Misdeeds* (1848); *Picturesque Sketches of Greece and Turkey* (1850); *Ireland's Church Property and the Right Use of It* (1867); *The Church Establishment of Ireland* (1867); *Constitutional and Unconstitutional Political Action* (1881); *Essays Chiefly on Poetry* (1887); *Essays, Chiefly Literary and Ethical* (1889); *Recollections of Aubrey de Vere* (1897).

DE VERE, *dė vēr'*, MAXIMILIAN SCHELE, LL.D.: b. near Wexio, Sweden, 1820, Nov. 1: author; d. 1898. He received a thorough education, served some time in the Prussian army, and then in the diplomatic corps, and, re-

moving to the United States, was appointed prof. of modern languages in the Univ. of Va., 1844. He has contributed largely to current periodicals; published *Outlines of Comparative Philology* (1853), *Stray Leaves from the Book of Nature* (1856) *Studies of our English, First French Reader, Grammar of the French Language* (1867), *Wonders of the Deep* (1869), *Grammar of the Spanish Language, Americanisms* (1871), *Modern Magic* (1872), *The English of the New World* (1873), and *The Great Empress*, a novel; and translated into English the *Problematic Characters* of Spielhagen (1869), *Through Night to Light* (1869), and *The Hohensteins* (1870).

DEVEREUX: see ESSEX, EARL OF.

DEVEST, v. *dĕ-vĕst'* [see DIVEST]: in *OE.*, to strip or take off clothes; to divest; to annul. DEVES'TING, imp. DEVESTED, pp. *dĕ-vĕs'tĕd.*

DEVEX, or DEVEXE, a. *dĕ-vĕks'* [L. *devexus*, pp. of *deveho*, I carry down—from *de*, down; and *veho*, I carry]: bending or bent downward: N. a curve; devexity. DEVEXITY, n. *dĕ-vĕks'ĭ-tĭ*, a curving or incurvation downward; a declivity.

DEVIATE, v. *dē'vĭ-āt* [mid. L. *devĭātus*, gone aside—from *de*, *vĭă*, a way or path: It. *deviare:* F. *dévier*]: to turn aside from the common way or method; to wander from the right path or course; to err; to go astray. DE'VIATING, imp. DE'VIATED, pp. DE'VIA'TION, n. *-shŭn* [F.—L.]: a. turning aside; variation from an established rule; a departure, as from a right course, way, or line; a wandering, as from the path of duty; sin; error. *Deviation of the plumb-line*, irregularity observed near massive cliffs, supposed to be due to their attraction; observed also on plains, and attributed to subterranean hollows, or to denser masses of earth. DEVIOUS, a. *dē'vĭ-ŭs* [L. *devĭŭs*, that lies out of the highway]: out of the common track; wandering; roving; going astray; circuitous. DE'VIOUSLY, ad. *-lĭ.* DE'VIOUSNESS, n. state of being astray.—SYN. of 'deviate': to wander; swerve; stray; depart; digress; deflect;—of 'devious': rambling; vagrant; excursive; winding; erring.

DEVIATION OF THE COMPASS: the deviation of a ship's compass from the true magnetic meridian, caused by the proximity of iron. In wooden ships no magnetic deviation is perceptible so long as the ship is heading north or south. The greatest deviation is seen when the vessel heads east or west. In iron ships the magnetism is fixed by hammering and riveting, and the deviation manifests itself exactly in accordance with the point toward which the hull headed while these processes were going on. Armor-plated ships should be plated with their head in a different direction from that in which they lay when built. The mode now generally employed to correct deviation is by introducing on board ship masses of iron and magnets to exactly neutralize the action of the ship's magnetism.

DEVICE, n. *dĕ-vīs′* [OF. *devisel* a device, an emblem—from mid. L. *divīsă*, a division of goods, a device (see DEVISE)]: a contrivance; anything formed by design; a scheme or stratagem; a project; an emblematical representation. DEVICE′FUL, a. *-fûl*, in *OE.*, full of devices.—SYN. of 'device': emblem; design; scheme; shift stratagem; invention.

DEVICE′, [from middle-age Lat. *divisa*, a drawing or design]: a motto expressed by a pictorial emblem. The motto proper originated in the emblem, a written inscription coming to be added to the pictorial design, to render the meaning more explicit. As early as the times of Æschylus, 'the seven heroes before Thebes' appear with devices on their shields. In the middle ages, devices on coat armor came into regular and formal use. They were used both as charges on the shield and as crests. The device differs from other heraldic emblems in that it has always some specific reference to the history, or circumstances, or position of the bearer. Devices, moreover, were generally borne only by the individual who assumed them, and not by the other members of his family or his descendants, like the crest or cognizance. They were often contrived to typify a special enterprise, the general character of the wearer, or even to designate his name. On all festal occasions, they figured on triumphal arches, on banners and hangings. At a later period, it became customary to work devices into buildings. See BADGE: CREST: MOTTO: HERALDRY.

DEVIL, n. *dĕv′l* [AS. *deóful;* F. *diable*, devil—from L. *diabŏlus;* Gr. *diabŏlos*, the devil: comp. Gael. *diabuail*, the god who strikes]: the Evil Spirit; Satan. DEV′ILISH, a. of or like the devil; wicked. DEV′ILISHLY, ad. *-lĭ*. DEV′ILISHNESS, n. the quality of a devil. DEV′ILISM, n. *-ĭzm*, state of the devil. DEV′ILMENT, n. wicked mischief. DEV′ILRY, n. *-rĭ*, mischief and tricks as might be expected from the devil; extreme wickedness. DEV′IL, v. to grill with Cayenne pepper, as kidneys. DEV′ILING, imp. DEVILED, pp. *dĕv′ld*. GOING OR GONE TO THE DEVIL, irretrievable ruin. TO PLAY THE DEVIL WITH, to produce irretrievable ruin. PRINTER'S DEVIL, an errand boy or junior apprentice in a printing-office, originally so called because he managed the inking on a hand-press and became daubed with ink himself.—SYN. of 'devilish': Satanic; diabolic or diabolical; hellish; infernal; detestable; destructive; malicious.

DEV′IL, or SA′TAN [Gr. *diabolos*, false accuser: Heb. *satan*, adversary]: in the Old and New Testament a mighty spirit of evil who has, during unknown ages, ruled over a kingdom of evil spirits, and is in restlessly active opposition to God. This belief, however, was very gradually developed in the Jewish mind; and it is beyond all question, that it acquired clearness and prominence through extranational influence. In England, the 'doctrine of Satan' has received scarcely any critical treatment

at the hands of scholars; but in Germany, the subject has been most learnedly investigated. The conclusions at which some of the most learned biblical scholars of the continent have arrived, and even the principles on which they proceed, may be questioned or even rejected; but a brief account of their method of historical analysis may be instructive. The older Hebrews, it is said, who lived before the period of the Babylonian captivity—judging from the silence of Scripture—knew nothing, and certainly taught nothing of evil spirits in the later sense; i.e., of beings separated from God, who were evil in the essence of their nature, and worked evil only (though against this statement will be adduced the record in the early chapters of Genesis, of the 'Serpent' who slandered God to Eve, and of the 'Satan' who appears as the slanderer of Job to God). *Moral* evil was rather looked upon as properly the act of man; *physical* evil, or adversity, on the other hand, as punishment merited through sin, and inflicted by a just and holy God, who was thus necessarily conceived as the true source of all calamity. The angels who foretold God's purposes, and executed his will, however great might be the physical evil that they occasioned, are never accused of *moral* evil. Even in the Mosaic account of the seduction of Eve, it is said that we need not believe that the author regarded the serpent other than as 'the most subtle of all the beasts of the field,' or that he meant to conceal under so plain a statement an allusion to Satan. It is probable, however, that at some early period in their history, the popular faith of the Jews, partly divorcing itself from its grand religious conceptions of the 'one living and true God,' and lapsing—as has everywhere been the case with the popular faith—into petty superstitions, had become familiar with the idea of certain fearful unearthly beings haunting wildernesses, similar to the fauns and satyrs of Greece, who might form the connecting-link in the later development of an actual demonism. Traces of this are clearly visible in the Pentateuch. The Hebrew word *seirim*, Leviticus xvii. 7, which our translators have rendered 'devils,' means only 'hairy ones.' Now, the Egyptians worshipped the *he-goat*, and the Hebrew partook, as we know, of their idolatry. Therefore Moses in this verse, forbidding them to commit this sin in future, says: 'They shall *no more* offer their sacrifices to *seirim;*' i.e., to the Egyptian he-goats. The development of demonism was materially furthered during and after the Babylonian captivity by Medo-Persian influences. In those canonical books of the Old Testament which belong, in their present form, to the post-exilian period—i.e., the period subsequent to the exile—the Jewish conceptions of angels become more definite. They possess different ranks, names, and specific offices. They are the tutelary guardians and helpers of particular lands and peoples, but are everywhere in absolute dependence on God. And now we meet also, for the first time, with an angel called *Satan*, who, however, still figures as a minister of God, and with the

others appears before Jehovah, but with the function assigned to him of accuser and seducer. It is he who—1 Chron. xxi. 1 (*Chronicles*, it should be mentioned, is considered by many critics, both evangelical and rationalist, to be the composition of Ezra, and therefore *post-exilian*)—stirs up David to number the people; while in the older Hebrew version (2 Sam. xxiv, 1) the same act is attributed to the indignation of God, the conception of Satan not *then* having clearly, if at all, presented itself to the Hebrew mind. It is Satan also who throws suspicion on the piety of Job, and with the permission of Jehovah, causes a series of misfortunes to befall him; and in Zachariah iii. 1, Satan is represented as 'resisting' the angel of God, and as a false accuser of the high-priest Joshua. As yet, however, an evil nature is not *expressly* ascribed to him, but, what is much the same, it is assumed that he takes a pleasure in active evil. It is alleged to be a purely arbitrary and untextual interpretation of Isaiah xiv. 12 ('How art thou fallen from heaven, O Lucifer, son of the morning!') that would force these words to refer to the fall of the devil, or determine from them his name. In the Apocrypha, of which only a small part is Palestinian, the rest being either *Chaldaico-Persian* (e.g. *Tobias* and *Baruch*) or *Ægypto-Alexandrian* (e.g. *Wisdom*) in its origin, the older Hebrew doctrine of misfortune coming from the angel of Jehovah is, so to speak, dismembered, and demons or evil spirits (but improperly translated 'devils') in the New-Testament sense of the term (*pneumata ponera*), are for the first time mentioned (and in *Tobias* and *Baruch* frequently) as the authors of calamities. According to the representations of these writings, the evil spirits dwell, like the older Hebrew hobgoblins, in waste places, but associate themselves for the injury or destruction of men, enter into them as tormentors, and can be expelled only by magical or mysterious means. To this class of beings the heathen deities were reckoned to belong. But even here there is no mention of an *organization* or kingdom or prince of demons. The first trace of a *Diabolos* or devil proper (and one in all probability springing from a foreign source) shows itself in the Book of *Wisdom* (ii. 24), in relation to the seduction of Eve, where it is said that through the devil the necessity of death has come into the world.

In the period elapsing between the close of the Apocrypha and the appearance of Jesus Christ, the Jewish ideas of angels, as well as of demons and the devil, received an extensive development. This angelology and demonology, wholly foreign to the older Hebrew religion, is deemed to have been derived in all its essential characteristics from the system of Zoroaster, with which the Jews had become familiar by their long and close intercourse with the Persian empire during the exile, and subsequently. It was, however, impossible to transfer the *dualism* of Zoroaster into a creed so purely *Monotheistic* as that of the Jews; this would have destroyed the foundation on which their entire history rested. Two beings, equally eternal, equally

powerful, was an idea which no Hebrew—mindful of the glorious deliverance of his forefathers out of the land of Egypt, of the law given amid the thunders of Sinai, of the manna in the wilderness, of the triumphs in Canaan, and the golden psalms of David—could for one moment entertain.

But on the other hand, now that as a nation the Jews were become weak and of little account, hemmed in, and crushed by mighty and advancing empires, no conception could seem more true or prove more consolatory, than that which permitted them to attribute their misfortunes to the agency of a demoniacal race, headed by a potentate inferior only to Jehovah himself. They could now believe that God had not forsaken his 'chosen people.' Thus, it is claimed, the dualism of Zoroaster suggested the kingdom and royalty of Satan, but the doctrine shaped itself in harmony with the national monotheism. The Devil and his demons were represented as originally *angels*, who had fallen from their 'high estate,' been punished by God, and had therefore assumed a position of hostility, without, however, being able to materially frustrate the divine purposes. These opinions found almost universal reception among the people, as well as among those Jewish theologians who, with the Mosaic Law, held oral tradition also an authentic source of religious doctrine. Indeed the only Jewish sect which rejected them, was that of the Sadducees, who considered them, as also the doctrines of the Resurrection from the Dead, of the Messiah, of the Messianic kingdom, of the Last Judgment, of rewards and punishments, and of angels and demons, to be new outlandish anti-Mosaic myths and theories. This conflict of opinion among the Jews prevented their ideas of the devil and demons from obtaining in spite of their broad diffusion, a dogmatic and systematic stability. The populace and the Pharisees believed fervidly in the existence of such evil spirits, but their conceptions had not only all the heat, but all the confusedness of superstition.

In this condition were the Jews when the New Testament lifts up the veil of oblivion that had partially dropped on the face of the nation more than two centuries before, and the light of history again falls brightly on its features. We now find a swarm of demons in Palestine. These unclean spirits, however, can be exorcised. When expelled from the soul of the demoniac, their proper home is 'the abyss' (*Eis ten abusson*, Luke viii. 31). According to the popular conceptions, therefore, we must suppose their dwelling to be a dark subterranean region, although, like the demons of the Old Testament, they inhabit also the earth and the air. These demons (not properly 'devils') formed a society governed by a chief, called Satan, Devil, Beelzebub, Belial, etc. He is now firmly seated in the popular imagination as a fallen angel; but as yet there is no hint of his having seduced his followers from their allegiance to Jehovah, or of their having fallen at the same

time. This idea first appears in the book of Revelation, chap. xii. (but it certainly is plainly stated in Paul's epistles that he works to seduce and deceive *men*) where mention is made of a great war in heaven between Michael and his angels on the one hand, and the devil and his angels on the other; 'And the great dragon was cast down, the old serpent, he that is called the devil and Satan, the deceiver of the whole world: he was cast down to the earth, and his angels were cast down with him.' Whether or not these popular conceptions of the devil and his influence were materially or spiritually interpreted by Christ himself, these scholars declare it impossible to say. He may either have accommodated his language to suit the popular mode of realizing the power of evil (a supposition which to their view involves nothing unworthy of his sinless character), *or* (for this is the only other hypothesis compatible with a belief in his divinity) he may have intended to recognize the essential truth of that doctrine of an evil personality which the Jews developed under the influence of Zoroastrian ideas.

But whether Christ meant to accommodate his language to the popular conceptions or not, the primitive church assumed the personality of the devil as an unquestionable fact. The New Testament ideas on this point were not only greatly enlarged, but in many respects entirely changed, partly through the introduction of a considerable number of heathen notions, and partly through the dogmatic tendencies of the time, in consequence of which the various statements in the Bible regarding Satan and evil were *uncritically* and *unhistorically* heaped together, and a doctrine of Satanic agency elaborated *logically* but not *theologically*. Holding firmly to the belief of a Satanic kingdom of darkness opposed to Christ's kingdom of light, the majority of the early Christians ascribed all evil, physical as well as moral, to the Devil and his demons; failures of the crop, sterility, pestilence, murrain among cattle, mental maladies, persecutions of the Christians, individual vices, heresies, astrology, philosophy, and especially the whole body of heathenism, with its mythology and religious worship. The heathen gods were believed to be conquered by the work of Christ, but not to be wholly powerless; they sank down into demons, and so a part of their mythology passed into the doctrine of the devil. It was they who, as demons, meaning to deceive, uttered oracles, were present at sacrifices, and inhaled the sacrificial incense, whereby the notion gained ground that the demon-nature was ever growing more and more sensual and materialized—a notion that reacted again on the conception of hell, which soon began to be painted in coarse earthly colors, blazing with eternal fire, through which blackened devils and scorched souls flitted in endless torment. From the gross materialism that now vitiated all conceptions of the devil and of demons, sprang the loathsome belief, common enough in the early church fathers, but during the middle ages exhibiting itself only in the superstitions of the vulgar

—viz., of the carnal intercourse of devils with women: see WITCHCRAFT.

Concerning the fall of the 'devil and his angels,' opinions were long diverse. Some supposed that it occurred through envy; others, through pride; others, again, through concupiscence and excess; some placed it before, and others after the seduction of Eve by the serpent. Several of the Fathers (for example, Augustine) believed that man was created to fill up the gap which had been caused in the kingdom of Christ through the apostasy of Satan and those whom he had led astray. Meanwhile, the idea of the importance of the death of Jesus had been dogmatically elaborated. At first, Christians saw in that death a sacrifice, and in his blood a propitiatory power; but soon their thoughts reverted to the other scriptural representation of an actual victory over the devil, a restoration of the Divine image in man, and the source and condition of holiness, whence was developed a wonderful dogma concerning the devil. God having declared that whoever should transgress his law, should incur death and damnation; and man having done so, God's justice and veracity compelled him to keep his word. But inasmuch as Eve was beguiled into transgression, and fell as it were unwittingly, it did not seem for the honor of the Deity that rational beings, partakers also of his own spirit, should be lost through a trick of the Fiend; wherefore Jesus offered himself to the devil as a ransom for the souls of men. The devil, thinking 'the *man* Christ Jesus' of more value than all the rest of the race put together, closed the bargain immediately. But deceived in his turn by the 'appearance of flesh,' he did not recognize the Deity concealed beneath it; and not being able to retain the truly Divine Christ—indeed, shrinking from him in horror and dismay—he lost *both*—Christ and man. The devil was, however, *actually* deprived only of Christians; in all other men he dwelt and ruled through the force of original sin. In consequence of this, ne was formally and with ecclesiastical ceremonies 'banished' (until the 3d c.), not only from 'demoniacs,' but also from all converts to Christianity from Judaism and heathenism; and when the practice of baptism had shaped itself into the dogma, that it was 'a necessary preliminary to holiness,' exorcism, or 'driving out the devil,' became a priestly 'art,' exercised on all new-born children. Those who died unbaptized, were (by that ruthless logic that frequently marks a barbarous theology) sent to hell; for though *potentially* Christ's, the church had not yet rescued them from their satanic master, by the appointed rite, and so the conditions being unfulfilled, the devil carried off his prey. Yet the heart of humanity, stronger in its simple instincts than the most iron creed ever hammered out of the human brain, showed its holy presence even in so fearful a dogma; and though it could not deliver the lost infants from the region of eternal fire, it assigned them less painful pangs, and a less dreadful dwelling-place. Also, baptism as the saving rite,

was allowed to be performed in case of expected death by laymen and even by women. But while the power of the devil over all not guarded by Christian faith and rites, was supreme; over those who were so guarded, it was utterly weak. No Christian, not even the weakest, could be *forced* by him to do evil. Thus far had the 'doctrine of the devil' been developed at the 8th c., and at this point it has essentially remained in the Eastern or Greek Church; but in the Western, it took yet another development. This was mainly occasioned by the writings of Pope Gregory the Great, who partly took up the popular notions himself, infused into them other than prevalent theological opinions, and elevated the result of the incongruous mixture to the dignity of church doctrine. He calls the devil 'a stupid beast,' because he hopes for heaven, without being able to reach it, and entangles himself in his own net; but on the other hand, he admits him to have a *potentia sublimitatis*, and utters the profound idea that he cannot comprehend our thoughts. In these three notions lie the essential germs of the Germanic Faust-devil. The old German and Norse mythologies poured a flood of heathen fancies into the 'doctrine of the devil.' Even Ulfilas, at a much earlier period, had translated the New Testament word *daimon* or *daimonion*, by *unhulthô*, i.e., she-devil, or sorceress, because the old Germans believed in *female* demons, while the Christian *usus loquendi* contains no trace of such. The peculiarly German conception of a now malignant, now gentle *female* devil, lives to this day in the German phrase, 'The devil is beating his mother' (when rain and sunshine quickly alternate). In England and Scotland, too, the phrase is, or recently was current,'The devil and his dam.' The Germans have also the proverb, 'Where the devil cannot come, there he sends his grandmother.' Soon, however, the word *diabolus*, in violation of the New Testament distinction between it and *daimon*, came to signify devils of every or any sort. The Gothic form of the word was *diabulus, diabaúlus;* old Saxon, *diubhul, diubhal, diobol;* old High German, *diufal, tieval, tiubil*, etc. The dwelling of the devil was, of course, hell, which, however, according to old Germanic and Scandinavian notions, was placed in the dreary regions of the north. Although his mischievous powers are to be mostly controlled till the coming of Antichrist, when he expects to hold carnival, yet, like the ancient gods and demons, he occasionally appears on the earth. He then assumes at times a purely human form, but, like Vulcan, who was thrown down from heaven like himself, and the smith Wieland, of German mythology, he is somewhat lame. He is covered with a gray, green, or red cloak, like the Kobolds (q.v.) and Dwarfs (q.v.), (the earth and house spirits of the suppressed heathenism): sometimes, also, he appears black and sooty, as befits his dwelling place, and his opposition to a pure God. But as the old deities, both classical and German, possessed the power of transformation to a most remarkable degree, the devil, through

his relationship with these, inherited this power when they vanished from the scene. The form he most frequently assumed was that of an animal, approximating, in this respect, to the German forest-spirits and the Greek satyrs and fauns. At one time, he shows the foot of a horse or goat, with horns and tail; at another, he appears as a black horse, a he-goat, a hog, a wolf, a hell-hound, a raven, a serpent, a worm, a dragon, or a fly. The conception of the power of the devil was vastly enlarged by the influx of these new fancies. In fact, it rose almost to a new dualism; but, on the other hand, also, many mild and friendly *traits* of the heathen gods passed over into the popular conception of the devil, and gave to his nature a quite new, humorous, and even merry side. As, after the introduction of Christianity, offerings were still occasionally made to the old gods, the devil shared in these honors. A horse, a he-goat, or a hound were at times sacrificed to him; and to the present day the expression has survived, 'To kindle a fire for the devil'—obviously an allusion to altar-flames. Various features of the old Norse gods, especially of Loki and Donar (Thor), the gods of fire and thunder, also were transferred to him. Hence the still current phrases in Germany, when thunder is heard: 'The devil must be striking,' and 'The runaway goose has gone to the devil.' (*Donner*, 'thunder,' is the word used for the devil in this case.) Every power, too, which, according to the older heathen belief, was lodged in the lesser demons, giants, etc., had now its proper centre in the great Fiend himself, who could perform all the pranks attributed to the more grotesque creations of the Norse mythology, and work all the evil of the more malignant spirits; but, in general, these beings were rather pressed into his service than absorbed by him, or incarnated in his person.

So did this great, originally Persico-Judaic belief spread itself through all Christian lands, incorporating with itself, first, the kindred conceptions of the ancient classical world, and, ultimately, the rich and varied superstitions of Teutonic and Scandinavian lands. Thus decked out in the costume of many different climes and ages, the Image of Evil passed into the light of the modern world. Every step forward that it now took robbed it of some potent spell that used to chill the blood and strike the heart with awful horror. Men first lost faith in the devil's occasional incarnation; then medical science undertook, though it did not complete the work, to destroy his claims to the origination of mental phenomena; natural science deprived him of his control over the elements; historical criticism plucked from him his borrowed feathers; while metaphysics and a deeper religious exegesis have combined, not, indeed, to annihilate his personality or deny his influence, but certainly to realize the former under a more spiritual form, and to limit the latter by a reverential belief in the wisdom and goodness of God. See Mayer's *Historia Diaboli* (1780), Horst's *Dæmonomagie* (1817), and *Zauberbibliothek* (1826), and Grimm's *Deutsche Myth-*

ologie (2d. edit. 1844); also Moncure Conway's *Demonology and Devil Lore* (1878).

At the outset of this article, it was stated that the 'doctrine of the devil' had received little critical treatment from English scholars. The following appears the prevalent mode of regarding the subject in Britain and America among those who give attention to religious doctrine. The doctrine of the existence of a personal devil, the chief of evil spirits, and directly or indirectly, through permission of free agency and for wise ends, the author of at least all *moral* evil, is maintained by reference to the Bible regarded as containing one revelation of truth harmonious in all its parts, and gradually developed. The Scriptures of the Old and New Testaments being thus regarded, and the supposition of conflict between the doctrines of their different books, or of error in any of them being rejected as inconsistent with a full recognition of their divine inspiration and authority, the doctrine in question is unavoidably deduced from them. It is found in the narrative of the Fall in Genesis, and the name *serpent* is again applied to the devil in the book of Revelation, where he is described as 'the old serpent, he that is called the devil and Satan' (Rev. xii. 9): he is believed to be repeatedly mentioned in the Old Testament. The hypothesis of an extra-Jewish origination and development of the idea of the devil would by some, be repudiated, while by others it would be deemed of small importance either way; probably most divines would consider it more probable that the Persians borrowed from the Jews, or transmitted the remains of some primitive revelation now lost, than that the Jews borrowed from the Persians. The mention of the devil in the New Testament is held to be conclusive not only of his existence, but of the belief in that existence (even when not expressed or hinted at) among the older Jews; though not necessarily conclusive as to their early belief in all the accumulated tenets of later times regarding the devil. The warnings and exhortations addressed to Christians are, it is also said, framed on the supposition of dangers arising from his violence, power, and subtlety. It is further argued, that the principal objections urged against the doctrine of the existence of a devil are substantially the same which present themselves to the mind as difficulties when we speculate on a fact, which, however, is beyond all question—the existence of moral evil.

DEVIL-FISH: see CEPHALOPODA: POULPE.

DEVIL'S ADVOCATE: see ADVOCATUS DIABOLI.

DEVIL'S DUST: name sarcastically given to old woolen materials manufactured into some variety of cloth: see SHODDY.

DEVIL'S DYKE, (1) an earthwork in Cambridgeshire, England, of prehistoric construction, about 20 feet in height. It is supposed to have been erected as a defense against enemies advancing from the Fen country. It

extended from the fens, or marshes, to the wooded hills, and thus closed the only way of approach from the interior towns of England, and prevented raids upon whatever band of conquerors held the country near the sea. (2) A natural formation near Brighton, England. The old legend said this was the work of the 'good spirits' who thus prevented the devil's attempt to flood the country because the people had abandoned paganism.

DEVIL-WORSHIPPERS: see YEZIDEES.

DEVIN, *dĕv'ĭn*, THOMAS C.: military officer: 1822—1878, Apr. 4; b. New York. In his early life he practiced the trade of a painter, at the same time interesting himself in military affairs, until he became lieut.col. of a militia regt. At the outbreak of the civil war, he entered the Union service as capt., and afterward was col. of the 6th N. Y. cav. He fought through the war, and was in with the army of the Potomac from Antietam till the surrender of Lee. He received his brevet of brig.gen. 1864, Aug. 15, and of maj. gen. 1865, Mar. 13, both for special instances of gallantry. He was reputed one of the two or three best cav. officers in the army. After the war he entered the regular army as lieut.col. of the 8th cav.; was brevetted col. U. S. A. 1867, Mar. 2, for gallantry, and brig.gen. for special services. He commanded the dist. of Arizona, and was appointed col. 3d cav. 1877, June 25.

DE VINNE, *dė vĭn'nĭ*, THEODORE LOW: printer: 1828, Dec. 25————————; b. Stamford, Conn.; son of the Rev. Daniel De V. (b. Ireland). He removed to Newburg, N. Y., 1844, and worked at the printing trade till 1848, when he removed to New York and settled in the printing business, with Francis Hart, 1859. The firm changed 1883 to Theodore De Vinne & Co., and became renowned for its success in improving the style of typography in general use. His printing has everywhere been esteemed for its excellence, and his contributions on subjects relating to typography have given him high repute as a literary man.

DEVIOUS: see under DEVIATE.

DEVISE, v. *dĕ-vīz'* [F. *deviser*, to commune, to dispose of—from OF. *devise*, a division, a project—from mid. L. *devīsa*, a division of goods, mark, device: It. *divisare*, to think, to imagine (see DIVIDE)]: to form in the mind; to plan; to scheme; to give or bequeath by will; to contrive; to project: N. a will; a bequeathing by will; that which is bequeathed by will. DEVI'SING, imp. DEVISED, pp. *dĕ-vīzd'*. DEVI'SER, n. *-zėr*, one who. DEVI'SABLE, a. *-zā-bl*, that may be given by will. DEVISEE, n. *dĕv'ĭ-zē'*, the person to whom real estate is bequeathed. DEVI'SOR, n. *-zėr*, one who gives by will.—SYN. of 'devisee, v.': to bequeath; plan; imagine; excogitate; invent; discover; find out. *Devise*, in Law, is conveyance of land by will. A devise is *vested* when the estate passes absolutely to the devisee on the death of the devisor; it is *contingent* when the vesting of the property in the devisee depends on a future event;

in such case no estate vests till the occurrence of the event. But if the future event is mentioned in the will simply to fix the time when the devisee shall have the use of the estate, not the *title*, the estate may vest at once on the death of the divisor. The law favors such construction of a will as shall vest the estate, provided the manifest intention of the devisor is not annulled. See WILL, IN LAW; LEGACY.

DEVITALIZE, v. *dē-vī′tăl īz* [L *de*, down; Eng *vitalize*]: to deprive of vitality or life, as a part of an animal body.

DEVITRIFICATION, n *dē-vĭt′rĭ-fĭ-kā′shŭn* [L *de*, from; *vitrum*, glass; *facĭō*, I make]: the decomposition of glass; a process by which glass is converted into a kind of white and opaque porcelain, effected by a very high temperature, and then cooling slowly.

DEVIZES, *dē-vī′zĕz* (anciently *Divisæ*, *Divisis*, *De Vies*): municipal borough in the middle of Wiltshire, England, near the Avon and Kennet Canal, 22 m. n.n w of Salisbury. It lies high at the mouth of Pewsey Vale, between the thinly peopled tracts of Salisbury Plain and the Marlborough Downs. It has manufactures of snuff and malt, and agricultural steam-engines and implements, and is the seat of one of the most important corn-markets of the west of England. The chancel of St. Mary's Church in Devizes is believed to be nearly as old as the Conquest. Roman household gods and coins have been found here Devizes arose in a castle built by Roger, Bp. of Salisbury, in the time of Henry I. This castle, of which only the walls of one of the dungeons remain, was besieged and taken by Cromwell 1645. From the time of Henry VIII till about 1820, Devizes was the seat of extensive cloth manufactures. Pop. 7,000.

DEVOID, a. *dĕ-voyd′* [OF. *desvuidier* and *desvoidier*, to empty out—from OF. *des* for L. *dis*, apart; *voidier*, to void —from L. *dis*, *vidŭŭs*, left alone]: empty; vacant; free from; destitute.

DEVOIR, n. *dĕv-wawr′* [F. *devoir*, to owe; *devoir*, duty —from L. *debērĕ*, to owe]: an act of civility or respect; service.

DEVOIRS OF CALAIS: *dĕv-wawr′ ov kăl′ĭs*, or *kâ-lā′*: the customs dûe to the king of England for merchandise brought to, or carried out of, Calais while the English staple (q.v.) was there.—*Cowel's Interpreter*. 'Merchants of the west may buy merchandises, so that they find sureties to carry them to the west or to Calais.'—2 Rich. II. st. 1. c. 3.

DEVOLVE, v. *dĕ-vŏlv′* [L. *devolvĕrĕ*, to roll or tumble down—from *de*, *volvo*, I roll—*lit.*, to roll down]: to pass over from one person to another, as by succession; to be delivered over to a successor; to fall upon or come to as by right. DEVOL′VING, imp. DEVOLVED′, pp. *-vŏlvd′*. DEVOLUTION, n. *dĕv′ō-lō′shŭn* [F.—L.]: removal from one person to another. DEVOLVE′MENT, n. the act of devolving.

DEVONIAN, a. *dĕ-vō′nĭ-ăn:* in *geol.*, a name applied to the marine division of the Old Red Sandstone, as extensively developed in Devonshire, England. DEVONITE, n. *dĕv′ŏn-īt,* a phosphate of alumina found in Devonshire.

DEVO′NIAN SYS′TEM: name proposed by Murchison and Sedgwick to replace the more characteristic and older term, Old Red Sandstone, because the slaty and calciferous rocks in Devonshire are richer in characteristic fossils than the contemporaneous sandstones, and because the name has less lithological limitation. The name Old Red distinguished certain sandstones and marlites from similar rocks mostly above the carboniferous, and called the New Red Sandstone, which in England included parts of the Triassic and some older strata, while in this country it came into use especially in connection with the red sandstones of the Triassic. Both names (Old and New Red) are now obsolescent, except that in Britain Old Red still retains its original use as limited to certain sandstones of this age which are referred to landlocked waters because not affording distinctively marine fossils. The designation Devonian age or system, now in general use, includes all the strata between the Silurian and the Carboniferous, and is called also the Age of Fishes, because fishes were the highest form of life, and were conspicuous, having begun to appear in the latter part of the previous Silurian, characterized as the age of invertebrates.

In England the D. S. comes to view as the surface rock of Cornwall and the adjacent Devonshire, reappearing n. of Bristol Channel along the s. border of Wales, and extending as a broad wedge n. into Shropshire. A division has long been made into Upper, Middle, and Lower Devonian, which have been regarded as equivalent to similar divisions of the Old Red Sandstone of Scotland (denied by Prof. Geikie, who finds no Middle series in Scotland); and, beneath these, the Tilestones or Ledbury Shales. The following classification of the D. S. is given by Prof. Geikie, in the 1903 edition of his work:

UPPER DEVONIAN	Pilton group—Slates and grits. Baggy group—Sandstones—Slates. Pickwell—Down group—Red, green, gray, purple slates and grits.
MIDDLE DEVONIAN	Ilfracombe Slates—grey silvery slates resting on grits and slates of Combe Martin—limestones passing into slates and volcanic rocks. Fossils most abundant—limestones best developed.
LOWER DEVONIAN	Hangman grits and slates. Lynton group, grits and calcareous slates. Foreland grits and slates.

The Upper series, hardly distinguishable from the lower strata of the coal-measures, are light-colored sandstones, which, in Fifeshire, Scotland, are rich in remains of Holoptychius (q.v.), Pterichthys (q.v.), etc.; in Ireland there are intercalated beds, with ferns and fresh-water shells; in Germany, beds that take their name from the abundant

Cypridina and Clymenia (q.v.). The Middle series, to which are referred in England the Dartmouth and Plymouth groups, has such characteristic fish as Coccosteus (q.v.) in the Caithness flags and in equivalents on the continent, which in Germany include the Calceola slates. The Lower series is represented at North Foreland, Lynton, and Torbay, in England, mostly gray laminated rocks; in Scotland, red sandstones, conglomerates, etc., and other rocks on the continent; all identified by fossils, the most remarkable of which are Cephalaspis (q.v.) and Pterygotus (q.v.). The Tilestones, of Herefordshire, have a commingling of Silurian and Devonian remains. The identification of the several divisions and the separation of the uppermost from the carboniferous, in England, has been more or less in question. In Scotland, unlike England, the D. S. occurs on the e. side as surface rock, namely, from Caithness s. around the Moray Forth, and more or less in the great central valley, bordering the carboniferous, from Forfar to Dumbarton, and s. of the Firth of Forth to Berwick. In Ireland, strata of this age are found in the sea-board counties of the s. and southwest. On the continent the D. S. comes to the surface over wide areas from n.e. France through central Europe, occurring as dark-gray arenaceous and shaly rocks of great thickness, with some limestone, and largely displayed in the n.e. of Russia, where the beds of limestone with marine fossils are interstratified with red sandstones and marls, containing the characteristic fish-remains found in Scotland, made famous by the works of Hugh Miller (q.v.).

In the United States, rocks of this age are mostly shales, flags, and limestones, total thickness 15,000 ft. (but 500 ft. w., where limestones prevail), and are surface rocks in patches in New Brunswick and along the Alleghanies, expanding in n.e. Penn., and continued, from near the Hudson river, over the s. half of N. Y.; thence w., inclosing Lake Erie, they spread s. of the s. line of Mich. into Ky., inclosing the Silurian 'Cincinnati uplift'; northward, they occupy the s.e. border of Mich., extending widely in s.w. Ontario, and re-appearing over the n. fifth of the Mich. peninsula. A large area extends from Rock Island through Io. into Minn.; another begins near our boundary and runs n., inclosing Lake Manitoba; still another lies s. of Hudson Bay. In the Rocky Mt. region are numerous outcrops, and outside of the areas above given, both e. and w., rivers cut down through later rocks into the Devonian. Along the 'finger lakes' of interior N. Y., escarpments display the nearly entire series, from the Oriskany sandstone to the Chemung, the highest member but one, e.g., on the e. side of Cayuga Lake, which is like a vast stratigraphical wall-map of this age, 40 m. long. For the divisions of the American D. S. see GEOLOGY, where the oldest rocks are placed first in the table. The Chemung group corresponds with the 'Erie shale' in Ohio, and the Genesee with the 'Huron shale' of Ohio and the 'Tennessee Black

shale'; the two groups form the 'Huron group' of Michigan. A larger division is made into two eras or formations, all from Corniferous to Oriskany, inclusive constituting the Lower Devonian, and with a large development of limestone, while the upper is mostly shales and sandstones, and the Catskill (possibly yet to be classed with the carboniferous) and Chemung have beds of conglomerate as well as of sandstones and shales. The Genesee epoch has 100–350 ft. of black bituminous shale, yielding 15–20 per cent. of mineral oil. The Hamilton beds furnish fine flagstones. The Corniferous is named from horn-stone nodules, and supplies excellent limestones for building. The Schoharie and Cauda-Galli grits (the latter named from a supposed sea-weed, in cock's-tail form), disappear w., and the Oriskany sandstone, thin in central N. Y., is several hundred ft. thick s. and west. In O. and Ind., the Hamilton (there calcareous), Corniferous, and the Niagara (Silurian) come together, forming the so-called 'cliff limestone.' In New Brunswick and Nova Scotia is the Old Red Sandstone in the present Brit. acceptation and comparable with the beds in Scotland, viz., deposits more or less red, with land-plants and non-marine fish.

The salient features of the Devonian vegetal life were the first marked appearance of land-plants, represented by ferns, lycopods (such as lepidodendrons), equiseta or calamites; also, the first known dicotyledon, found near Lake Erie, referred to the gymnosperms and akin to pines. With the land-plants came naturally the first appearance of true insects. They had neuropterous wings, but combined with these were features now belonging to other orders. Other animal remains include a great display of corals; shelled cephalopods with flexed partitions; enormous sharks, as measured by the size of their fin-spines; ganoids and the new placoderms, oddly shaped and armored.

DEVONPORT, *dĕv'on-pōrt* (before 1824, called Plymouth Dock): parliamentary and municipal borough, maritime and fortified town, and naval arsenal, in the s.w. of Devonshire, on Stonehouse Creek, on the e. shore of the estuary of the Tamar, two m. w.n.w. of Plymouth. It owes its importance to the dock-yard established here by William III., still one of the chief naval arsenals in Britain. D. has breweries, soap-works, and an extensive trade in refitting and victualling ships. It returns two members to parliament. Pop. (1901) 69,674.

DEVONSHIRE, *dĕv'on-shĕr:* maritime county, in the s.w. peninsula of England, between the Bristol and English Channels. The n. coast, 60 m. long, is mostly steep and rocky; the chief indentation being Bideford Bay. Copper, tin, iron, and other metals occur, with potters' and pipe clays, Bovey coal, marble, gypsum, fluor-spar, and loadstone. The rivers are very numerous, the chief being the Exe, Dart, Tamar, Tarridge, and Taw. The climate is humid and equable

—cool in summer and mild in winter. The great mildness of the s coast in winter has made it a resort for invalids, especially those with pulmonary troubles Here myrtles flourish in the open air, and, with a little care, the orange and lemon. From its humidity, Devonshire is more grassy than Cornwall, and there are fine meadows along the rivers. In the south, especially in Exeter Vale, the soil is very productive. The chief crops are grass and clover, alternating with corn and potatoes. The fertile red loam of Exeter Vale produces wheat, barley, beans, pease, and flax. Devonshire has much oak wood and extensive orchards. It is famed for clotted cream and cider. The apple-trees grow on the hill-slopes and in the hedges. The chief manufactures are serges, linen, gloves, and lace; the chief exports are butter, cheese, cattle, and sheep. The red Devon breed of cattle is highly valued. Dartmoor mutton and Exmoor ponies are famous Devonshire has important pilchard, mackerel, dory, and salmon fisheries. The electric torpedo occurs in the estuaries. Devonshire is divided into 33 hundreds, 470 parishes, and 17 poor law unions. The chief towns are Exeter (the county town), Plymouth, Devonport, Tavistock, Tiverton, and Barnstaple. Devonshire sends 13 members to parliament—8 for the county, and 5 for the first three of the above towns. Devonshire has many British and Roman remains, as stone circles, dolmens, barrows, and camps. The Saxons failed to conquer Devonshire till the 9th c. It was ravaged by the Danes in the 9th and 10th c , and by the Irish in the 11th c. At the Reformation, 1549, there were great disturbances in Devonshire. In 1688, the Prince of Orange landed at Torbay. Pop. 631,766

DEVOTE, v. *dĕ-vōt′* [L. *devōtus*, attached, faithful—from *de*, *vōtus*, vowed, wished for: It. *devoto;* F. *dévot*, pious]: to set apart by vow; to dedicate or consecrate; to doom; to execrate; to give up wholly; to apply closely to; to addict one's self to wholly or chiefly. DEVO′TING, imp. DEVO′TED, pp.: ADJ. ardently attached; faithful; doomed; addicted. DEVO′TION, n. *-shŭn* [F.—L.]: state of being consecrated or dedicated; acts of religious worship; careful performance of religious duties; ardent love and affection; ardor; eagerness; in *OE.*, act or visit of respect or ceremony, said of a superior. DEVO′TIONAL, a *-ăl*, suited to devotion; pertaining to devotion. DEVO′TIONALLY, ad. *-lĭ*. DEVO′TEDNESS, n. state of being devoted. DEVO′TEDLY, ad. *-lĭ*. DEVOTEE, n. *dĕv′ō′tē*, one wholly or superstitiously given to religion and religious exercises; a bigot. DEVO-TIONALIST, n., or DEVO′TIONIST, n. one who—same as DEVOTEE. DEVOTO, n. *dē-vō′tō* [It.]: a devotee.—SYN. of 'devote': to apply; addict; consign; destine; resign; set apart;—of 'devotion': consecration; addiction; attachment; affection; devoutness; religiousness; piety; devotedness; earnestness.

DEVOUR, v. *dĕ-vowr′* [F. *dévorer*—from L. *devorārĕ*, to gulp down, to devour—from *de*, *vŏrō*, I eat greedily: It. *divorare*] to eat up; to eat with greediness; to consume; to destroy; to waste. DEVOUR′ING, imp.: ADJ. destroying;

ravenous. DEVOURED′, pp. *-vowrd′*. DEVOUR′ER, n. one who. DEVOUR′INGLY, ad. *-lĭ*.—SYN. of 'devour': to annihilate; feast; use up.

DEVOUT, a. *dĕ-vowt′* [OF. *devot*, devoted—from L. *devōtus*, devoted (see DEVOTE)]: earnestly attentive to religious duties; pious; sincere. DEVOUT′LY, ad. *-lĭ*, with ardent devotion; piously. DEVOUT′NESS, n. state of being devout.—SYN. of 'devout': religious; holy; pure; earnest, solemn; prayerful; reverent.

DEW, n. *dū* [AS. *deáw;* Dut. *dauw;* Ger. *thau;* Sw. *dagg*, dew: Low Ger. *dauen*, to dew, to thaw]: the moisture deposited on the ground from the air at night, due to the rapid cooling of the earth's surface: V. to wet as with dew; to moisten. DEW′ING, imp. DEWED, pp. *dūd*. DEWY, a. *dū′ĭ*, like dew; moist with dew. DEW′INESS, n. DEW′LESS, a. having no dew. DEW-BERRY, fruit of the gray bramble; the *Rubŭs cæsĭŭs*, ord. *Rosācĕæ*. DEW-DROP, a drop or spangle of dew. DEW-FALL, the time at evening when the dew begin to fall. DEW-LAP [Dan. *dog-læp*]: the loose skin that hangs from the neck of an ox. DEW-PIECE, a piece of bread, which in former times was given to farm servants, when they went out to work early in the morning. DEW-POINT, the temperature at which dew begins to form—that is, a temperature just too low to allow the air to retain all the moisture with which it is saturated. DEW-STONE, a kind of limestone which gathers a large quantity of dew. DEW-WORM, the common earth-worm, *lumbricus terrestris*.

DEW: atmospheric vapor condensed and deposited. For any assigned temperature of the atmosphere, there is a certain quantity of aqueous vapor which it is capable of holding in suspension at a given pressure. Conversely, for any assigned quantity of aqueous vapor held in suspension in the atmosphere, there is a minimum temperature at which it can remain so suspended: this minimum temperature is called the dew-point. During the day-time, especially if there has been sunshine, a good deal of aqueous vapor is taken into suspension in the atmosphere. If the temperature in the evening now falls below the dew-point, which after a hot and calm day generally takes place about sunset, the vapor which can be no longer held in suspension is deposited on the surface of the earth, sometimes visibly falling in a fine mist. This is one form of the phenomenon of dew, but there is another. The surface of the earth, and all things on it, and especially the smooth surfaces of vegetable productions, are constantly parting with their heat by radiation. If the sky is covered with clouds, the radiation sent back from the clouds nearly supplies an equivalent for the heat thus parted with; but if the sky be clear, no equivalent is supplied, and the surface of the earth and things growing on it become colder than the atmosphere. If the night be calm also, the small portion of air contiguous to any of these surfaces will become cooled below the dew-point,

and its moisture deposited on the surface in the form of dew. If this chilled temperature be below 32° F., the dew becomes frozen, and is called *hoar-frost*. The above two phenomena, though both expressed in our language by the word dew, which perhaps tends to a confusion of ideas on the subject, are not necessarily expressed by the same word. For instance, in French, the first phenomenon—the falling evening-dew—is expressed by the word *serein;* while the latter—the dew seen in the morning gathered in drops by the leaves of plants, or other cool surfaces—is expressed by the word *rosée*,

The merit of the discovery of the 'Theory of Dew' has been commonly ascribed to Dr. Wm. Charles Wells, who published in 1814 his *Essay on Dew*, which was widely read. The merit should, however, be divided between him and several others. M. Le Roi of Montpellier, M. Pictet of Geneva, and especially Prof. Alex. Wilson of Glasgow, contributed much. The extent to which the accepted theory is applicable to all the facts has been questioned by Prof. Levi Stockbridge, whose experiments, tending to show that dew does not so much 'fall' from above as rise from the ground below, are detailed in an annual report of the Massachusetts Agricultural College.

DEWAN, n. *dē-wawn'* [Pers. *dīwân*]: in *India*, a tribunal; a royal court; a council of state; a minister of state; a steward.

DEWAS, *dē-wâs':* town of Malwa, India, 24 m. n.n.e. from Indur. It is the cap. of a petty state or raj under British protection, held jointly by two chiefs of the lineage of the Puar or Rajpoots, once very powerful. Area of the state under both chiefs, 11,125 sq. m.; pop. 1,301,712.

DEW'BERRY (*Rubus cæsius*): plant of the same genus with the Bramble (q.v.), and very nearly allied to it, but having weaker and more prostrate roundish stems, which take root at the end, their prickles unequal and passing insensibly into hairs, the fruit consisting only of a few (1–5) grains, which, however, are much larger than those of the brambleberry. The name is derived from the dew-like, bluish bloom which covers the fruit. The dewberry is common in many parts of Europe and Asia. The fruit is very sweet and agreeable, and makes excellent wine. The dewberry of N. America (*R. Canadensis*), or Low Blackberry, is abundant n. with a delicious fruit, much superior to the British fruit of the same name, and more tart. The plant is of very humble growth, scarcely rising above the ground.

DEWEES, *dē-wēs'*, William Potts, m.d.: 1768, May 5 —1841, May 18; b. Pottsgrove, Penn.: obstetrician. He took the medical course at the Univ. of Penn., and began practicing at Abington, 1789. In 1793, he removed to Philadelphia, made a specialty of obstetrics, and practiced with great success till 1812, when he temporarily engaged in agriculture, owing to impaired health. In 1826 he became adjunct prof. and 1834 full prof. of obstetrics and

diseases of women and children in the Univ. of Penn., but in the latter year he had a stroke of paralysis which led him to resign the office.

DE WET, *dā-vĕt'*, CHRISTIAAN, Boer general: b. Dewetsdorf, Orange Free State (now Orange River State), about 1860. He was bred a farmer, made a small fortune, and became a member of the Volksraad. Though practically without military experience, he served ably in the Boer-British War of 1899–1900, attaining the rank of general and outwitting the pursuit of Kitchener and Roberts in the summer of 1900, and of the former in the early part of 1901. His stand at Sanna's Post was highly praised by military experts. He was especially noted for his humane treatment of prisoners of war. His *Three Years of War* was published in 1902.

DE WETTE, *dĕh vĕt'tĕh*, WILHELM MARTIN LEBERECHT: 1780, Jan. 14—1849, June 16; b. Ulla, near Weimar: German theologian. He studied at the Univ. of Jena. In 1807, he was appointed extraordinary prof. of philosophy at Heidelberg; 1809, prof. of theology; and 1810, was called to Berlin. By his popularity as a teacher, as also by his writings, De Wette soon acquired great reputation. In 1819, on account of a letter which he wrote addressed to the mother of the assassin of Kotzebue, he was deprived of his chair. Not long afterward he was appointed prof. of theology in the Univ. of Basel, where his prelections and sermons in a short time secured general applause. In 1829, the grand council of Basel made him a member of the council of education, and granted him the freedom of the city. In 1849, he was elected rector of the university, but died the same year.

De Wette was a man of comprehensive learning and acute philosophic discernment. His antipathy to the shackles of dogmatic theology gave keenness and vigor to his criticism. Yet he formed no school, and followed no master, so that it is difficult to describe his position. He cannot be classed with either Paulus, Strauss, or Baur. A temperate but very decided historical rationalism, on a broad basis of moral reverence, would perhaps best express his biblical stand-point. His principal works are: *Beiträge zur Einleitung in das Alte Testament* (Contributions to an Introduction to the Old Testament), 2 vols. (Halle 1806–7); *Commentar über die Psalmen* (Commentary on the Psalms), Heidelberg 1811; *Lehrbuch der historischkritisehen Einleitung in die Bibel Alten und Neuen Testaments* (Historico-Critical Introduction to the Books of the Old and New Testament), 2 vols. (Berlin 1817–26); *Lehrbuch der Christlichen Dogmatik* (Compendium of Christian Dogmatics), 2 vols. (Berlin 1813–16); *Christliche Sittenlehre* (Christian Ethics); *Vorlesungen über die Religion, ihr Wesen, und ihre Erseheinungsformen* (Lectures on Religion, its Essence, and forms of Manifestation), Berlin 1827; *Das Wesen des Christlichen Glaubens* (the Nature of the Christian Faith), Basel 1846; and *Exegetisches Handbuch zum Neuen Testament* (Exegetical Handbook of the New Testament).

DEWEY, Chester, American educator: b. Sheffield, Mass., 1784, Oct. 25; d. Rochester, N. Y., 1867, Dec. 15. He was graduated at Williams College in 1806, where, in 110, he became professor of mathematics and natural philosophy, a post he held 17 years. In 1836 he was appointed principal of the Collegiate Institute in Rochester, N, Y., and in 1850 became professor of chemistry and natural philosophy in the University of Rochester, resigning 10 years later. He was an authority on grasses. He wrote *History of the Herbaceous Plants of Massachusetts*, and valuable papers on botany.

DEWEY, Davis Richard, American political economist and statistician: b. Burlington, Vt., 1858, April 7. He is a brother of John Dewey (q.v.). He was educated at the University of Vermont, and at Johns Hopkins University. He is professor of economics and statistics in the Massachusetts Institute of Technology, and secretary of the American Statistical Association. His works are: *Syllabus of Political History Since* 1815; *Report of Massachusetts Board to Investigate the Subject of the Unemployed* (1895); *Report of Commission to Investigate the Public Charitable ana Reformatory Interests and Institutions of the Commonwealth* (1897); *Financial History of the United States* (1902).

DEWEY, *dū'ĭ*, George: admiral, U. S. navy: 1837, Dec. 26————; b. at Montpelier, Vt.; son of Julius G. Dewey, physician; educated at Montpelier public schools, Northfield Military School (1851), and Naval Academy at Annapolis; graduated in 1858. Dewey was attached to the "Wabash" of the Mediterranean squadron (1859), and transferred to the "Mississippi" (1861). He assisted at the captures of New Orleans (1862, Apr.), Port Hudson, and Donaldsonville (1863), and was commissioned lieutenant 1861, Apr. 19. He was attached to the "Agawan," of the North Atlantic squadron, 1864-5. In March, 1865, he was promoted to lieutenant-commander, and served on the "Kearsarge" and the "Colorado." Dewey was appointed instructor at Annapolis (1868-9), and while attached to the "Narragansett," on the Pacific Coast Survey, was made commander (1870). He was a member of the Light-house Board, 1875, and while in command of the "Dolphin" was promoted captain (1884). Then followed a long period of shore duty, during which Dewey was again member of the Light-house Board (1893-95), and president of the Board of Inspection and Survey (1895-96). Promoted to commodore 1896, he was assigned to the Asiatic station. On the outbreak of the Spanish American war (1898, Apr. 21) he commanded six unarmored ships at Hongkong, China. Receiving orders to capture or destroy the enemy's fleet, he sailed for the Philippines, forced his way past the Spanish batteries on Corregidor Island and Cavité (May 1), and entered the bay of Manila to find seven Spanish cruisers and several gunboats, which he promptly attacked. The enemy's ships took refuge under the shore batteries of Cavité, but

ADMIRAL GEORGE DEWEY.

were quickly sunk, the shore batteries silenced, and the arsenal captured, without the loss of a single man. For this brilliant achievement Dewey received the thanks of Congress, was voted a sword, and commissioned rear-admiral 1898, May 10. By special act of Congress (1899, Feb.) he was created admiral. In 1901 he was president of the Schley court of inquiry, and in 1902 was appointed commander-in-chief of the united squadrons and fleets mobilized for extraordinary manœuvres.

DEWEY, John: American psychologist: b. Burlington, Vt., 1859, Oct. 20. He was educated at the University of Vermont and has been professor of philosophy and director of the School of Education at the University of Chicago; and professor of philosophy at Columbia University. Among his works are: *Psychology; Leibnitz's New Essays Concerning Human Understanding; Critical Theory of Ethics* (1891); *Study of Ethics; Psychology of Number; School and Society* (1899); *Studies in Logical Theory* (1903). He has been editor of the *Elementary School Record* and a contributor to philosophical magazines.

DEWEY, Melvil, American educator and librarian: b. Adams Centre, N. Y., 1851, Dec. 10. He was graduated from Amherst College in 1874; was college librarian during his senior year and for two years after graduation. He then went to Boston where he was active in founding the American Library Association, the Library Bureaus, the Metric Bureau for introducing the metric system, and the Spelling Reform Association. He was the founder and for five years the editor of the *Library Journal* and also editor of *Library Notes* and the *Spelling Reform Bulletin*. In 1883 he was appointed librarian at Columbia, and in 1887 established the school of library economy, of which he was made director. In 1889 he became secretary of the University of the State of New York, and director of the State Library, the library school being at that time transferred to Albany; in 1891 he became director of the home education department, and organized the system of traveling libraries. In 1906 he resigned his position as State Librarian and Director of the State Library School. In New York State he has accomplished much in the raising of school standards, and particularly in the improvement and founding of small public libraries. He has also had much influence on library work in the United States; has twice been president of the American Library Association, and its secretary for 15 years; he devised the decimal system for the classification of books which is widely used, and published a set of cataloguing rules, included in his *Library School Rules*. He has also published a revision of the laws of New York State in regard to education (1892), and the *Decimal Classification and Relative Index* (1885).

DEWEY, *dū'ĭ*, Orville, d.d., ll.d.: 1794, Mar. 28—1882, Mar. 21; b. Sheffield, Mass.: Unitarian minister. He graduated at Williams College 1814, and Andover Theol

Seminary 1819; was agent of the American Education Soc. some months; filled a temporary charge at Gloucester and became a Unitarian; was appointed asst. of Dr. Channing in Boston and preached in his pulpit two years; was pastor of the Unitarian Church in New Bedford 1823-34, and the Second Unitarian Church in New York 1835-49, and during the latter period his congregation built the Church of the Messiah; made two trips to Europe on account of ill-health; and filled brief pastorates in Albany, Washington, and Boston. His last public appearance was at the centennial celebration of the Congl. Church at Sheffield, 1876, June 18. Delivered courses of lectures before the Lowell Institute on the *Problem of Human Life and Destiny.*

DEWING, Thomas Wilmer, American figure and portrait painter: b. Boston, 1851, May 4. He was a pupil of Boulanger and Lefébvre and is an academician of the National Academy of Design 1888, and a member of the Society of American Artists. Among his pictures are: *Prelude; The Days,* which took the Clarke prize in 1887, and *The Garden.*

DE WINT, Peter: English landscape painter in water-colors: b. Stone, in Staffordshire, 1784, Jan. 21; d. London, 1849, June 30. He studied in the schools of the Royal Academy, where he occasionally exhibited; but most of his pictures were shown in the exhibitions of the Water-color Society. English scenery was his favorite subject. He occasionally painted in oil with marked success. Some of his best pictures are: *A Corn Field; Woody Landscape with Water; Lincoln Cathedral;* and *Harvest-time.*

DE WITT, *dĕh-wĭt'*, Jan: statesman of Holland: 1625-1672, Aug. 20; b. Dort. He was educated with great care and soon showed remarkable ability. In 1652 he was sent by the states of Holland to Zealand, to dissuade that province from adopting an Orange policy, and was made grand pensionary. The Orange party (supported by the populace and the clergy), during the war between England and Holland, was ever striving to increase the power of the young prince (afterward William III.), then a mere infant; the republican, or oligarchic, party, composed of the nobles and the wealthier burgesses at the head of which was DeWitt, sought, on the other hand, to strip the House of Orange of all Power, and to abolish entirely the office of stadtholder. In 1654, on the conclusion of the war with England, a secret article was inserted in the treaty between DeWitt and Cromwell, in virtue of which the House of Orange was to be deprived of all state-offices. After the restoration of Charles II., DeWitt leaned more to the side of France. This tendency necessarily received an impetus from the renewal of hostilities between England and Holland 1665. DeWitt's prospects suffered when the designs of Louis XIV. upon the Spanish Netherlands became manifest. The Orange party carried their point in the elevation of William to the family dignity of stadtholder. On the invasion of the Netherlands by

Louis XIV. 1672, the Prince of Orange was appointed commander of the Dutch forces; and the first campaign proving unfortunate, the popular clamor greatly increased against DeWitt, who had previously resigned his office of grand pensionary. His brother, Cornelius, accused of conspiring against the life of the stadtholder, was imprisoned and tortured. DeWitt went to see him on his release. When they were coming out of prison, they were attacked by an infuriated crowd, and both were murdered. The states-general demanded an investigation, and the punishment of the murderers, but the stadtholder did not take the necessary steps. De Witt was personally of upright character. His *Memoirs* were published during his life.

DEWITT, John: American Dutch Reformed clergyman: b. Albany, N. Y., 1821, Nov. 29. He was graduated at Rutgers College in 1838, and at New Brunswick, N. J., Theological Seminary in 1842. He was pastor of several churches 1842-63, and professor of Oriental literature and of Hellenistic Greek at the New Brunswick Theological Seminary 1884-91. He has been a member of the American Testament Revision Committee since 1872. Among his works are: *The Sure Foundation; Praise Songs of Israel; The Psalms,* a new translation; and *What is Inspiration?*

DE WITT, *dė wĭt′*, Thomas, d.d.: 1791, Dec. 13—1874, May 18; b. Kingston, N. Y.: Dutch Ref. minister. He graduated at Union College, Schenectady, 1808, and at the New Brunswick (N. J.) Theol. Seminary, 1812, was immediately ordained pastor of several united Dutch Ref. congregations in Dutchess Co., N. Y., and after preaching there till 1827 became pastor of the Collegiate Dutch Church in New York. He preached there in the Dutch language till 1858, and continued there as senior pastor till death. He was an officer of the N. Y. Hist. Soc. many years, and its pres. 1872–74; pres. of the New York City Mission and Tract Soc., and director in the American Bible, American Colonization, and American Sunday-school societies, beside being connected with other charitable and educational institutions.

DEWSBURY, *duz′bėr-e:* mining and manufacturing town and parliamentary borough in the West Riding of Yorkshire, England; at the base of a hill, on the left bank of the Calder; 32 m. s.w. of York, and 8 m. s.w. of Leeds. It is governed by a local board of health, has a chamber of commerce. Pop. 30,000.

DEXAMINE, n. *dĕks′a-mīn* [Gr. *dexamenē,* a receptacle, a reservoir]; small genus of crustaceans, family *Gammaridæ,* ord. *Amphipoda,* established by Leach.

DEXIA, n. *dĕks′ĭ-a* [Gr. *dexia,* the right hand]: genus of dipterous insects, type of the family *Dexiariæ.* Dexiariæ, n. plu. *dĕks-ĭ-ār′ĭ-ē,* family of dipterous insects, which subsist chiefly on the juices of flowers.

DEXTER, a. *dĕk′stėr* [L. *dexter,* right hand: Gr. *dexios,* on the right: Skr. *dakshina,* on the right, on the south, to

one looking east: Gael. and Ir. *deas,* right, southern]: in *her.,* the right side of a shield or coat of arms—see *Note* under ESCUAGE. DEXTRAL, a. *děk'străl,* or DEX'TRORSE, a. *-strŏrs, right* as opposed to *left;* right-handed—applied to the direction of the spiral in most of the univalve shells.

DEXTER, *děks'tẽr,* HENRY MARTYN, D.D., S.T.D.: 1821, Aug. 13—1890, Nov. 13; b. Plympton, Mass.; Congl. minister. He graduated at Yale 1840, and Andover Theol. Seminary 1844, and was ordained pastor of the Congl. Church at Manchester, N. H., the latter year. From 1849 till 1867 he was pastor of the Berkeley Street Congl. Church, Boston; from 1851 till 1866 was editor of the *Congregationalist,* and from 1859 till 1866 was editor of the *Congregational Quarterly.* In 1867 he resigned his pastorate in order to devote his whole time as editor-in-chief to the consolidated *Congregationalist and Recorder,* of which for 23 years he had charge. He was lecturer on Congregationalism at Andover Theol. Seminary 1877–80, and became a member of the American Antiquarian and the Mass. Historical societies 1869, and of the American Historical Assoc. 1884. His publications are voluminous: *The Moral Influence of Manufacturing Towns* (1848), *Temperance Duties of the Temperate* (1850), *Our National Condition and its Remedy* (1856), *The Voice of the Bible the Verdict of Reason* (1858), *What Ought to be Done with the Freedmen and the Rebels?* and *Congregationalism: What it is, Whence it is, How it Works* (1865), *A Handbook of Congregationalism* (1880), *Common Sense as to Woman Suffrage* (1885), and the first vol. of *A History of Old Plymouth Colony* (1887). He received the degree D.D. from Iowa College 1865, and S.T.D. from Yale 1880.

DEXTER, SAMUEL: American statesman and jurist: b. Boston, 1761, May 14; d. Athens, N. Y., 1816, May 4. He was graduated at Harvard University 1781; was admitted to the bar in 1784. He was repeatedly chosen to the legislature of Massachusetts, and in 1798 was elected senator of the United States. While senator he was appointed secretary of war in 1800, and in the same year secretary of the treasury. He was afterward, at different times, offered foreign missions, but always refused them. About the year 1802 he withdrew from political life, and returned to his profession. He was an unsuccessful candidate for governor in 1814. He was the first president of the first society formed in Massachusetts for the promotion of temperance.

DEXTER, TIMOTHY: 1743, Jan. 22—1806, Oct. 26; b. Malden, Mass.: merchant. He gained wealth in the leather dressing trade and the purchase and sale of continental money, assumed the title of 'Lord,' and entered on a career of marked eccentricity. He struggled in vain for social recognition in Boston, Salem, and Newburyport; fitted up a mansion in the latter place in a costly but grotesque style, spent $15,000 in furnishing his grounds with 40 columns, each supporting a colossal carved wood figure

of some noted person including himself, kept a poet laureate, bought large quantities of books and paintings that he could not appreciate, indulged to excess in strong drink, and toward the close of his life repented of his follies and bequeathed his possessions to his neglected relatives. He published a book omitting from the text all punctuation marks, and adding several pages of them at the end for each reader to distribute at his pleasure—a stroke of criticism on the varying rules on that subject.

DEXTERITY, n. *dĕk-stĕr'ĭ-tĭ* [F. *dextérité*—from L. *dexterĭtātem*, dexterity—from *dexter*, right hand]: expertness; skill; readiness in the use of the manual or mental powers; adroitness. DEX'TEROUS, a. *-stĕr-ŭs*, expert; ready; skilful in manual acts; ready in the use of the mental faculties. DEX'TEROUSLY, ad. *-lĭ*., skilfully; expertly—sometimes spelt DEXTROUS and DEX'TROUSLY. DEX'TEROUSNESS, n. —SYN. of 'dexterity': address; tact; cleverness; aptness; aptitude; faculty; activity; art; ability; facility; readiness; quickness; handiness.

DEXTRALITY: Dextrality refers to the normal preference for and the superior development of the right hand. It is a notable expression of the fact that though many of the organs of the body are dual, there is specialization and departure from symmetry of function. Left-handedness seems always to have been the exception. How far the prevalence of dextrality is due to natural tendency, to anatomical causes (circulation), or to artificial inculcation is not satisfactorily determined, though the evidence favors the dominance of the natural tendency. It has been established that the superiority of skill and efficiency of the right hand is an expression of the superior development of the left hemisphere of the brain. This hemisphere is related to the most specialized and precisely coordinated movements. As articulation falls in this class, impairment of this area brings about speech disorders. A condition of nearly equal proficiency with the two hands is called ambidexterity. The value of such acquisition and its possibility is insisted upon by some writers (notably Jackson; *Ambidexterity*), while others regard specialization as alike inevitable and desirable.

DEXTRINE, n. *dek-stren*, or BRITISH GUM (L. *dexter*, right hand): chemical formula $C_6H_{10}O_5$—a body obtained from starch, and very similar to it in composition; also called starch gum, British gum, etc. It resembles gum in being soluble in water, but is distinguished from that substance by composition, by being, like starch, converted into oxalic acid by nitric acid, and not into mucic acid, and especially by causing a ray of polarized light to deviate to the right, a property from which it derives its name. It is distinguished from starch by its pale buff color, its insolubility in alcohol, and its not being rendered blue by iodine, which gives it a dingy purple tint. Starch may be converted into dextrine by the action of dilute sulphuric acid at a temperature a little below that of boil-

ing water, by the action of diastase (q.v.) and by boiling. In the last mentioned process the starch is added to water when at a temperature of 140° F., a temperature slightly above this is maintained for 20 minutes, and when the mass has become fluid, is quickly raised to the boiling point. The liquid is then cooled, filtered, and evaporated to a syrup, which when cold and dried becomes hard like gum. Dextrin is used in large quantities for thickening calico-printers' colors, for making adhesive paper and labels, and for postage stamps, as a varnish, and for many other purposes.

DEXTROGYROUS, a. *děk-strŏj'ĭ-rŭs* [L. *dexter*, right hand; *gyrus*, a circle]: turning the plane of polarized light toward the right: see LÆVOGYROUS.

DEXTRORSAL, a. *děk-strŏr'săl*, and DEX'TRORSE, a. *-strŏrs'* [L. *dexter*, right hand; *versus*, turned]: rising spirally from right to left. DEXTROSE, n. *děks-trōs'*, a kind of glucose prepared by digesting starch or woody fibre in diluted sulphuric acid; the crystalline glucose or sugar of honey—so named because it deflects a ray of polarized light to the right when passed through its solution; starch-sugar; grape-sugar.

DEXTROSE, *děks'trōs*, grape-sugar, starch-sugar, or dextroglucose, $C_6H_{12}O_6$ or $C_6H_7O(OH)_5$. Dextrose occurs along with levulose in grapes and other sweet fruits, also in honey and in the urine of diabetic patients. It can be best obtained by boiling for several hours 50 parts of starch with dilute sulphuric acid (100 parts of water to 5 parts of H_2SO_4). The solution is then neutralized with chalk, filtered, boiled with animal charcoal to remove traces of color, and then evaporated carefully to dryness, forming an amorphous mass which contains about 60 per cent of dextrose, the remainder being chiefly dextrin. Pure dextrose can be obtained by crystallization from alcohol; it contains then one molecule of water of crystallization, and forms microscopic rhombic crystals, which soften at 60°, melt at 86°, and lose their water crystallization at 110°. See GLUCOSE.

DEY, n. *dā* [Turk. *dâi*, a friendly title, formerly given to middle-aged or old persons]: title of the governor of Tripoli, also of Algiers before its occupation by the French. At one time, Tunis likewise was governed by a dey, but this title has long been supplanted by that of bey. See BEG.

DHALAC, *dâ-lâk'*: island in the Red Sea, off the coast of Abyssinia; lat. 15° 46′ n., long. 40° 6′ e. It is 30 m. long, 15 m. average breadth, 120 m. in circumference. It is composed of coral rock, and its surface in general is flat and sandy. Doobelloo, a village on the e. side, trades with Loheia and Ghizan, ports on the Arabian coast, exchanging fish, sharks' fins, turtle, and pearls, for millet and dates. The groups of islands in the vicinity of Dhalac are called the Dhalac Archipelago. The inhabitants are good sailors and skilful fishermen.

DHAMEE, *dâ′mē:* hill-state of India, about 25 sq. m. on the left bank of the Sutlej; about lat. 31° 12′ n., and long. 77° 8′ e. It is merely a collection of mountains and valleys. The general elevation probably exceeds 4,000 ft., and even the margin of the river is 2,283 ft. above the level of the sea. Dhamee yields a revenue of about £800 a year, of which £36 are paid as tribute to the British government. Pop. 3,500.

DHAR, *dâr:* town on the table-land of Malwa, Central India; lat. 22° 35′ n., and long. 75° 20′ e.; at an elevation of 1,908 ft. above the sea. It is said to have at one time consisted of 20,000 houses, implying a population of about 100,000, and though very greatly decayed, it retains many traces of bygone magnificence—two large mosques of red stone, ten water-tanks of various sizes, and a fort defended by many considerable towers. It is the cap. of a protected state of the same name, having an area of 2,500 sq. m. Pop. 194,274.

DHARWAR, *dâr-wâr′:* district in the Southern Mahratta country, province of Bombay; 4,565 sq. miles. The inhabitants are mostly Hindus of the Lingayat sect, only 12 per cent. being Mussulman. There are many wild nomadic tribes in this district. Its drainage is divided between the Arabian Sea and the Bay of Bengal, passing to the latter by the Tumbudra, a feeder of the Kistnah or Krishna, and to the former by the Kali Nadi, through a deep valley of the Western Ghauts. The most interesting feature of the country is its suitableness for the growth of American cotton. In 1842, after several previous failures, the New Orleans staple was cultivated with success to the extent of 25 acres; and within five years, the breadth of land thus sown had increased a thousandfold. In connection with this enterprise, a good road has been constructed to Coompta, on the Arabian Sea, where the cotton is shipped for Bombay; hence commonly called 'Coompta cotton.' The prevalent language is Canarese, and there are a number of vernacular schools in the district. Pop. 1,051,314.

DHARWAR: town in the Southern Mahratta country, province of Bombay, close to the frontier of Madras. The town, the centre of a cotton district, has no manufactures of importance, but considerable trade. It is the cap. of the dist. of Dharwar. Pop. 32,841.

DHAWALAGIRI, *dâ-wâ-la-ghē′rē:* mountain in Nepaul; formerly supposed the highest peak of the Himalaya, but now ascertained to be at most only the third in point of altitude. It is stated to be 26,826 ft. above the sea; lat. 28° 42′ n., and long. 82° 32′ east.

DHOB: see CYNODON.

DHOLE, *dōl* (*Canis scylax*): Indian species of dog, existing in a wild state in the W. Ghauts and some other mountainous districts. It is in size between a wolf and a jackal, with rather long legs, sharp muzzle, wide and pointed ears, straight and not bushy tail, light-bay color, fierce keen eyes, and great courage. The name Dhole is

extended to some other very similar species or varieties, natives of Ceylon, Nepaul, and other parts of the East, to which the common name *Red Dogs* has been sometimes applied, and for which Colonel Hamilton Smith has proposed the sub-generic name *Chryseus*. They seem not incapable of domestication, but whether any of the domesticated dogs are derived from them is wholly uncertain. There is no reason to think that any of them are the wild offspring of once domestic races. They all lack the second tubercular tooth in the lower jaw, have oblique eyes, and the soles of the feet hairy. They hunt in packs. They all are inhabitants of the deepest recesses of wild mountain-forests. A remarkable characteristic of the dholes is their hostility to the feline races, the weaker and the young of which they attack and destroy. To this is ascribed the alarm which the tiger exhibits at the sight even of a domestic dog; and 'we may surmise,' says Colonel H. Smith, 'that the species of *Chryseus* are the instruments nature has appointed to keep down the superabundant increase of the great *felinæ* of the wilderness.'

DHOLKA, *dŏl'kâ:* town of India, in the British dist. of Abmedabad, presidency of Bombay. It is surrounded by a mud wall 4 m. in circuit. Pop. 20,000.

DHOLPORE, *dŏl-pōr':* town of Hindustan, on the left or n. w. bank of the Chumbul; lat. 26° 41′ n., and long. 77° 58′ e.; 34 m. s. of Agra, and 37 n. of Gwalior. Here are some elaborately wrought mosques and mausoleums of freestone. Of the former, one is said to have been built by Shah Jehan, the founder of the modern Delhi, 1634; and some of the other edifices, are of still earlier date. Dholpore is the capital of a protected state along the left bank of the Chumbul, containing 1,200 sq. m. Pop. 250,000.

DHOORCATEE, *dôr-kât-tē'*, or Darkoti: protected state in Hindustan, of not more than five sq. m.; lat. 31° 8′ n., and long. 77° 40′ e.; in the basin of the Jumna toward that of the Sutlej. Small as it is, it is worthy of notice as containing the peak of the Toongroo, which, 10,102 ft. above the sea, forms one of the stations of the large series of triangles in the trignometrical survey of the Himalaya. Pop. 590.

DHUBBOOEE, *dŭb-ô-ē':* decayed town in Guzerat, belonging to the Guicowar; lat. 22° 8′ n., and long. 73° 25′ e.; 78 m. n.e. of Surat, 225 n. of Bombay. It presents many memorials of ancient grandeur—such as a rampart of two m. in circuit, backed inwardly by a handsome colonnade; a magnificent tank, bordered by a grand flight of stairs and numerous Brahmanical temples—the whole richly adorned with curious sculptures. A still more remarkable fact is, that, in a purely alluvial neighborhood, where even a pebble is unknown, all these structures are of hewn stone. The population, inconsiderable in number, shares the place with swarms of monkeys.

DHUMTOUR, *dŭm-tôr'*, or Dumtaur': valley of the Punjab; n. lat. from 34° to 34° 10′, and e. long. from 72°

55′ to 73° 15′. Here a traveller from the north first finds the peculiar vegetation of Hindustan. While behind him are luxuriant forests of oak, plane, walnut, and pine, the sugar-cane grows before him in such abundance as to be the principal fodder for cattle. The population is distributed into villages, each defended by a small fort against neighboring marauders. The chief town, of the same name, is 16 m. e. of the Indus, on the route between Attock and Cashmere.

DHUN′CHEE, or Dhanchi (*Sesbania aculeata*): plant of the nat. ord. *Leguminosæ*, sub-order *Papilionaceæ*, of a genus having an elongated many-seeded pod, alternately swollen and contracted, as if it contained a string of beads. The Dhunchee is an annual herbaceous plant, much cultivated in Bengal for its fibre; it has an erect, sparingly branched stem, 6-10 ft. high. It is of rapid growth, and thrives in low and wet soils. Its fibre is coarser than hemp, unless cut very early in its growth, is durable in water, but contracts considerably when wet. It is steeped and prepared much like Sunn (q.v.).

DHURRA, or Dhoorra, n. *dûr′ră* [Ar. *durah*]: a kind of millet cultivated throughout Asia and in Northern Africa; an eastern measure of capacity.

DI, *dī*, [Gr. *di* for *dis*, twice]: a Greek prefix signifying 'twice.'

DIA, *dī′ă*, a Greek prefix signifying 'through or asunder; apart; between.'

DIABATERIAL, a. *dī-a-bā-tēr′ĭ-al* [Gr. *diabatēria* (sc. *hiera*), offerings, presented before crossing a river-border, etc.: *diabainō*, I cross—from *dia*, through, and *bainō*, I go]: passing across or beyond the borders of a place.

DIABETES, n. *dī′ă-bē′tēz* (Gr. *diabētēs*, a siphon—from *dia*, through; baino, I go]: a disease causing an immoderate flow of urine, either saccharine, *D. mellatus*, or non-saccharine, *D. insipidus*. Di′abet′ic, a. *-bĕt′ĭk*, pertaining to. Diabetes Insipidus is a disease characterized by extreme thirst and the excretion of very large quantities of a pale greatly diluted urine. It is distinguished from the common form of diabetes (diabetes mellitus) by the fact that the urine contains no sugar. The affection is of rare occurrence. It affects young or middle-aged men chiefly and is not infrequently an hereditary disease; it is found also for the most part in the members of neuropathic families. The first symptoms may appear after an attack of one of the infectious diseases or may follow a blow on the abdomen or an injury to the head. Mental or physical strain or the abuse of alcoholic liquors may apparently act in a causal relation.

The affection may begin suddenly or gradually, the first symptom to attract attention being the increased frequency of urination, causing great inconvenience during the working hours and disturbing the sleep at night; the quantity of urine excreted in the 24 hours may reach the enormous amount of eight or ten quarts. The thirst is

excessive and the patient drinks great quantities of water, but the bulk of urine almost always exceeds that of the fluid ingested; the excess is in great part accounted for by the fluid taken in with fruit, succulent vegetables, and other solid food, but some of it is derived from the tissues of the body. The urine is pale, of low specific gravity (1.002-1.006), neutral or faintly acid in reaction, usually free from albumin, except in the final stages of the disease, and free from sugar. The appetite is markedly increased except in the later stages of unfavorable cases, when it fails utterly; as a rule, digestion is usually fair, but there is usually constipation. The mouth and throat are dry and parched. There is apt to be much headache, neuralgic pains in various parts of the body are common, and cramps in the calves of the legs are often a distressing symptom. The spirits are depressed and the patient is often irritable. The disease varies greatly in severity and in seriousness; it may continue for a long time, the only signs being thirst, an abnormally large appetite, and more or less profuse urination. In favorable cases recovery may follow, but in others there is progressive emaciation ending finally in death from inanition. The affection is commonly associated with some lesion of the brain, such as tumor, softening from arterial sclerosis, tuberculosis, or abscess; but in the very chronic cases there is rather an irritation of the floor of the fourth ventricle, resulting possibly reflexly from some organic disturbance elsewhere in the body.

In the treatment of diabetes insipidus an endeavor must be made to determine the cause, and if any constitutional disease, such as syphilis, is present which may cause a local deposit in the brain, an effort should be made to cure that condition. Many drugs have been given with a view to restrain the excretion of urine, but with only temporary relief as a rule. The food should be digestible and nutritious, and spices, alcohol, and other substances which increase thirst or have a diuretic action should be avoided. Massage and electricity are sometimes apparently beneficial. A life in the open air, moderate exercise, a pleasant but light occupation, and freedom from worry or other mental strain are all advantages, and should be advised when there is reason to believe that the advice can be followed. Diabetes Mellitus is a disease characterized by the constant excretion of sugar in the urine, an increased excretion of urine, and great thirst. When the urine contains sugar only occasionally, as when a large quantity of sweets have been eaten, the condition is called glycosuria and is not diabetes; the same is true when the sugar in the urine is of the kind known as lactose or milk sugar, or when it is pentose; in true diabetes mellitus, the sugar excreted is grape sugar. Diabetes mellitus is a disease of adult life, occurring in men more often than in women. Several members of a family may be affected; it also occurs with comparative frequency in families in which other members or the parents have been gouty or

unduly fat. Certain races seem to be prone to suffer from the disease; thus it is common in Southern Italy and India: in the latter country the Hindus suffer more frequently than the Mohammedans; it is believed that Hebrews are especially predisposed to the affection. Among the causes of diabetes are usually believed to be violent mental emotion, such as fright or anger, or a less severe mental disturbance, such as worry or apprehension continued over a long period. Injuries to the head or abdomen are recognized causes, and among other less frequent factors in the production of the disease are infectious diseases, abuse of alcoholic liquors, and exposure to cold and damp. In association with diabetes mellitus there are frequently lesions of the brain, liver, or pancreas.

The first symptoms noted are usually the thirst and an increased excretion of urine, and gradually emaciation and weakness supervene. The mouth is dry, thirst is extreme, the appetite is increased (in the later stages of severe cases it is lost), and there is constipation. The flesh wastes away in spite of the large appetite; the face is wrinkled and drawn. Cramps in the calves of the legs are common, especially at night. All these symptoms may be present in diabetes insipidus, the distinctive sign being that in diabetes mellitus the urine contains grape sugar and usually in large quantity. The skin is dry and rough in pronounced cases and perspiration is almost entirely absent. The pulse and temperature are usually normal, but the skin of the body feels cool to the touch. Boils and carbuncles are frequent in diabetes. The sight is usually affected; this may be due to catarrh or to changed refraction owing to the increased density of the fluids of the eye which, like all the fluids of the body in this disease, contain more or less sugar. A frequent complication of diabetes mellitus is tuberculosis of the lungs which usually runs a very chronic course without pronounced symptoms. The disease varies in severity and in rapidity of course, lasting in some cases a few years or even months, in other cases for ten to fifteen years, even disappearing entirely as long as a moderately strict diet is adhered to. The outlook is usually worse in the young. Diabetes mellitus most frequently terminates in coma. This may come on suddenly or gradually; in the latter case it is preceded by coldness of the skin, rapidity of pulse, nausea, headache, short breath, and great lassitude which insensibly progresses to drowsiness and unconsciousness. In other cases the coma may appear suddenly without any, or with few, of these warning signs. When death does not occur in coma it is usually the result of the pulmonary tuberculosis.

It is not known positively in what diabetes mellitus consists, that is, what process in the economy is at fault. In some cases there seems to be an inability to destroy the sugar within the body—both that which is formed during metabolism and that which is introduced with the food. In such cases, which are the mild ones, is is usually suf-

ficent to exclude sweets and starches, as far as possible, from the dietary to prevent the excretion of sugar in the urine. In other cases there is an excessive formation of sugar in the economy from the proteids or the fats in the food or already present in the body, and in these even sometimes malignant and uncontrollable cases, the absolute exclusion of sugar and starch from the food is ineffectual in freeing the urine from its saccharine excretion. What causes this disturbance in the ordinary metabolic processes is not yet determined. In some cases it seems to be the liver which is at fault, in others the pancreas, and in still others certain portions of the brain; in some cases of pronounced diabetes none of these organs seems to be at fault. It is probable that many conditions may disturb the processes of metabolism in such a way as to cause sugar to be present in excessive amount in the blood and other fluids and to be excreted in the urine, and that therefore there are many forms of diabetes mellitus, all having in common the symptom of a constant excretion of large quantities of saccharine urine.

The treatment of diabetes is chiefly dietetic, the aim being to withdraw as completely as may be all carbohydrates (sugar and starches) from the diet. The problem of how to do this without at the same time interfering with the proper nutrition of the patient is a very nice one requiring careful study and observation on the part of the physician. Any attempt on the part of the patient to diet himself is most inadvisable, for he may do himself an irreparable injury and increase rather than diminish the disease from which he suffers.

DIABET'IC SUG'AR: variety of sugar found in the blood and secretions of the higher animals, especially when afflicted with the disease called diabetes. It is a variety of grape-sugar or glucose. See GRAPE-SUGAR.

DIABLERETS, *dē-âb-lė-rā':* remarkable mountain of the Bernese Alps, Switzerland, between the cantons of Bern and Valais; lat. about 46° 18′ n., and long. 7° 15′ e.; 10,670 ft. above the sea. The Diablerets is composed of limestone strata, the lower beds of which are so soft and shaly, that they are easily disintegrated by the infiltration of water given off from the glaciers on the north east. The consequence is that, the foundation being worn away, the peaks tumble over into the valley, occasioning the most terrible catastrophes. Three peaks have already fallen in this way, and the two that remain threaten to follow sooner or later. In the fall in 1714, 15 people, 100 head of cattle, and 55 châlets were destroyed; and the result would have been much more appalling, had not premonitory noises given the inhabitants timely warning to escape. In 1749, the fall of another peak arrested the course of the Liserne, which thereafter formed two small lakes known as Derborenze.

DIABLERY, n. *dĭ-ăb'lėr-ĭ* [F. *diablerie*—from *diable*, the devil]: devilry; sorcery or incantation.

DIABOLIC, a. *dī′ă-bŏl′ĭk*, or DI′ABOL′ICAL, a. *-ĭ-kăl* [L. *dĭăbŏlus;* Gr. *diăbŏlos*, the devil]: devilish; extremely malicious; atrocious. DI′ABOL′ICALLY, ad. *-lĭ*. DI′ABOL′ICALNESS, n. DIAB′OLISM, n. *-lĭzm*, the actions of the devil, possession by the devil.

DIACALPE, n. *dī-a-kăl′pē* [Gr. *dia*, across; *kalpē*, a pitcher, an urn]: genus of polypodioid ferns; natives of Java.

DIACATHOLICON, n. *dī-a-ka-thŏl′ĭ-kŏn* [Gr. *dia*, through; *katholikos*, universal]: the universal purgative; the old name given to an electuary composed of vegetable and carminative substances.

DIACAUSTIC, a. n. *dī′ă-kawz′tĭk* [Gr. *dīă*, thorough; *kaustĭkos*, having the power to burn]: in *geom.*, pertaining to curves formed by refraction: see CAUSTIC (in Optics).

DIACHYLON, n. *dī-ăk′ĭ-lŏn* [Gr. *dīă*, through or by means of; *chulos*, juice]: adhesive plaster formerly made from expressed juices, now made of a lead soap or mixture of litharge (red oxide of lead) and olive oil. It is prepared on a great scale by machinery.

DIACHYMA, n. *dī′ă-kī′mă* [Gr. *dīă*, through; *chumŏs*, a fluid, juice]: the cellular tissue of leaves occupying the space between their two surfaces; the parenchyma of leaves.

DIACODIUM, n. *dī-a-kō′dĭ-ŭm* [Gr. *diakōdion*—from *dia*, through; *kōdeia* a poppy-head]: a preparation of poppies. SYRUP OF DIACODIUM, the former name of syrup of white poppies.

DIACONAL, a. *dī-ăk′ŏ-năl* [F. *diaconal*—from L. *dīăcōnus* (see DEACON)]: pertaining to a deacon. DIACONATE, n. *dī-ăk′ŏ-nāt*, the office of a deacon.

DIACONICUM, n. *dī-a-kŏn′ĭ-kŭm* [Gr. *diakonikon*, pertaining to service—from *diakonus*, a servant, a deacon]: a place contiguous to the ancient churches, wherein were preserved the sacred vestments, vessels, relics, and ornaments of the altar; in modern language, the sacristy (q.v.).

DIACOPE, n. *dī-ăk′o-pē* [Gr. *diakopē*, a cutting in two—from *dia*, across; *koptō*, I cut]: in *gram.*, tmesis; the separating of two parts of a word by the interpolation of other words: as, 'Of whom *be* thou *ware;* in *surg.*, a longitudinal fracture or fissure of the cranial bone, or an oblique cut of the cranial integuments; in *ich.*, genus of acanthopterygian fishes of the perch family, many species of which inhabit the Indian seas.

DIACOUSTICS, n. plu. *dī′ă-kows′tĭks* [Gr. *dia*, through; *akouō*, I hear]: the science that treats of the properties of sound passing through different mediums.

DIACRITIC, a. *dī′ă-krĭt′ĭk*, or DI′ACRIT′ICAL, a. *-kăl* [Gr. *diăkrĭtĭkŏs*, having the power of discerning or distinguishing—from *dia, krino*, I judge]: that separates or distinguishes—applied to points or marks used to distinguish letters of nearly similar form, especially in Hebrew and the Semitic languages.

DIADELPHIAN, a. *dī′ă-dĕl′fĭ-ăn*, or DIADEL′PHOUS, a. *-dĕl′fŭs* [Gr. *dis*, two; *adelphos*, a brother]: in *bot.*, having the stamens united by their filaments into two distinct bundles, as in the DI′ADEL′PHIA, n. *-fĭ-ă*, the second class of the Linnæan system.

DIADEM, n. *dī′ă-dĕm* [F. *diadème*—from Gr. *diadēma*, a band or fillet for encircling the heads of kings—from *dia*, *dĕō*, I tie or bind]: a band or fillet of silk, woolen, or linen, for encircling the head, subsequently forming a badge or mark of royalty; a crown; figuratively, empire; sovereignty: V. to adorn with a diadem. DI′ADEMED, a. *-dĕmd*, crowned; ornamented.—The diadem was generally narrow, being only a little broader on the forehead. The diadem of the Egyptian goddesses and kings bore the symbol of the sacred serpent. The diadem of Bacchus, as it appears in antique sculptures, was a plaited band round the forehead and temples, tied behind, with the ends hanging down. Among the Persians, the diadem was bound round the tiara or turban, and was of a blue color worked with white. The early Roman emperors refrained from using this ornament, in order not to call up recollections of the hated kingly office. Diocletian was the first to introduce it again, and Constantine the Great added new ornaments to it. After his time, it was adorned with a single or double row of pearls and precious stones. Queens also are seen on coins, ornamented with the diadem with the addition of a veil. It was finally superseded by the Crown (q.v.).

DIADEMA, n. *dī-a-dē′ma:* genus of echinoids, typical of the DIADEMADÆ, *dī-a-dĕm′a-dē*, a family of regular echinoids, sometimes made to include the *Hemicidaridæ*.

DIADEM SPIDER: the Garden Spider, *Epeira diadema*.

DIADROM, n. *dī′ă-drŏm* [Gr. *dĭădrŏmē*, a running across—from *dia*, *drŏmos*, a course, a running]: a course or passing; time in which a pendulum performs its vibration.

DIÆRESIS, n. *dī-ē′rĕ-sĭs* [Gr. *diairĕsĭs*—from *diairĕō*, I divide—from *dia*, *airĕō*, I take]: in *grammar* the resolution of a diphthong, or of a contracted syllable, into two syllables; as Lat, *auræ* into *auraï*. The name is given also to the mark .. placed above the latter of two vowels, to indicate that it is to be pronounced independently, and not in conjunction with the preceding vowel; as in the word *aërial*.

DIAGLYPHIC, a. *dī-a-glĭf′ĭk* [Gr. *dia*, intens., *gluphō*, I carve]: term applied to sculpture, engraving, etc., in which the subject is sunk into the general ground.

DIAGNOSIS, n. *dī′ăg-nō′-sĭs* [Gr. *dīăgnōsis*, judging faculty, a distinguishing—from *dia*, through; *gignōskō*, I know: F. *diagnose*]: in *med.*, the through-knowledge or thorough knowledge of a disease, embracing its points of distinction from other diseases, its symptoms, their relation to one another, and to the state of the different organs

and functions of the body, so far as this can be appreciated during life. Diagnosis is spoken of usually in contrast with Prognosis, which implies the judgment framed by the physician as to the issues of disease; and also with Prophylaxis [*pro*, from, and *phylaxis*, protection], which refers to warding off disease, when supposed to be impending. Diagnosis includes the study of all the vital phenomena of diseases, and also of their appearances after death, so far as this can aid their discovery during life. It is usual to speak of rational or physiological diagnosis, or diagnosis by symptoms—i.e., functional changes; and of physical diagnosis, or diagnosis by signs—i.e., objective phenomena appreciable by the senses of the observer. The latter method of diagnosis has been much enlarged in scope, and increased in importance by discoveries in Auscultation (q.v.) and Percussion (q.v.); also by the great advances made in physiological chemistry, and by the use of the microscope. Dī′AGNOS′TIC, a. *-nŏs′-tĭk*, distinguishing the nature of a disease: N. the sign or symptom by which one disease is distinguished from others. Dī′AGNOS′TICS, n. plu. *-tĭks*, the study of symptoms by which one disease is distinguished from others. DIAGNOSE, v. *dī′ăg-nōz′*, to distinguish or determine a disease by its symptoms. Dī′AGNOS′ING, imp. Dī′AGNOSED, pp. *-nōzd*. Also Dī′-AGNOS′TICATE for DIAGNOSE. Dī′AGNOS′TICATING, imp. Dī′AGNOS′-TICATED, pp.

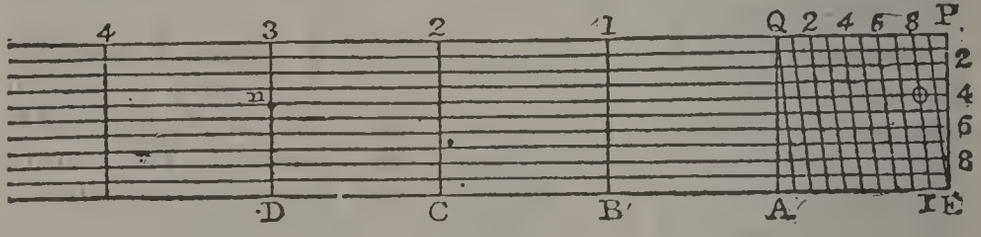
DIAGOMETER, n. *dī-a-gŏm′ĕ-tĕr* [Gr. *diagō*, I conduct through]: an electroscope invented by Rousseau, in which dry pile is employed to measure the amount of electricity transmitted by different bodies, to determine their conductivity. It is used to ascertain the conducting power of oils, as a means of detecting their adulteration.

DIAGONAL, n. *dī-ăg′ŏ-năl* [F. *diagonal*—from mid. L. *diagōnālis*—from Gr. *dia*, *gōnĭă*, a corner]: straight line drawn from one angle of a parallelogram to another opposite angle, and dividing the figure into two parts: defined in plane geometry as a straight line joining any two angles, not adjacent, of a rectilineal figure. A line drawn between two adjacent angles would coincide with their boundary-line. A triangle has no diagonal, because any two of its angles are adjacent; a four-sided figure has two diagonals; a five-sided, five; a six-sided, nine, etc. The number of possible diagonals in any figure is found by taking three from the number of sides, multiplying the remainder by the number of sides, and taking half the product. Thus, in the six-sided figure, the process is $\frac{3 \times 6}{2} = 9$. If the diagonals must be so drawn as not to intersect, their number is always three less than the number of sides. It makes no difference whether they all proceed from one angle or not. A diagonal in a solid bounded by planes, is a line joining any two solid angles so situated that the line does not coincide with any line on the surface. To find the number of such diagonals in

a given solid: Multiply the number of solid angles by the same number diminished by one, and from half this product subtract the number of edges on the figure, also the sum of the number of diagonals in all the faces. Thus, the cube gives $\frac{8 \times 7}{2} - 12 - 6 \times 2 = 4$ diagonals. DIAG'ONAL, a. drawn from one corner or angle to another. DIAG'ONALLY, ad. *-lĭ.*

DIAGONAL CLOTH: a soft, woolen, twilled material, made in various colors, without any pattern. It measures 52 in. in width, and is much employed for decorative embroidery, and for gentlemen's clothing and ladies' jackets.

DIAGONAL SCALE: scale consisting of a set of parallel lines with other lines crossing them obliquely, by means of which hundredths of units may be laid down or measured with compasses. It is thus constructed: Lay off on a straight line, any equal parts EA, AB, BC, CD, etc. Draw 10 lines parallel to DE, and equidistant; and draw EP, AQ, B1, C2,. .etc., perpendicular to DE. Divide QP, AE, into 10 equal parts. Join the 1st, 2d, 3d,. .divisions on QP with the 2d, 3d, 4th,. .divisions on AE respectively. If the divisions on AD each represent 100, each of those on QP will represent 10. Thus from 3 on AD to 8 on QP is



Diagonal Scale.

380; but by moving the points of the compasses down to the fourth line, and extending them from *n* to o, the number will be 384. For the distance of 8 on QP from Q is 80, and of *r* from A is 90; hence that of *o* from the line AQ is 84. When the divisions on AD denote tens, those on QP denote units, and from *n* to *o* would then represent $38\frac{4}{10}$ or 38.4. When the numbers representing the lengths of the sides of any figure would give lines of an inconvenient size taken from the scale, the numbers may be all multiplied or all divided by such a number as will adapt the lengths of the lines to the required dimensions of the figure.

DIAGORAS, *dī-ăg'o-ras:* Greek poet and philosopher, of B.C. 5th c.; b. in Melos, an island of the Cyclades. Beyond his reputation for atheism, nothing positive is known of his career. He is said to have been a disciple of Democritus of Abdera, and to have resided in Athens during the more important part of his life. He is alluded to by Aristophanes in the *Clouds* (B.C. 424); and from an epithet applied there to Socrates, it is highly probable

that that great philosopher had been a pupil of Diagoras, or at least held similar opinions. This perhaps explains the accusation brought against him of atheism. In all likelihood, Diagoras was no atheist, but merely a *disbeliever in polytheism;* and the anecdotes related of him, such as his once throwing, when needing fuel, a wooden image of Hercules into the fire, to cook his dinner, serve to confirm such a supposition. He seems to have been witty and fearless, and probably treated the rude superstitions of the common-place Athenians with dashing contempt. In this way he may have become specially notorious, and so fixed himself in the Greek mind as the *representative* atheist. Diagoras was banished from Athens professedly on account of his impiety, but really on account of his politics. He went first to Pallene, afterward to Corinth, where he died. He wrote lyrics of various kinds and a philosophical work entitled *Phrygioi Logoi*. Personally, he was a man of untainted character, and discharged his duties as a citizen in an earnest and exemplary manner.

Old Sun-dial:
In the former Zoological Gardens, Edinburgh.

DIAGRAM, n. *dī′ă-grăm* [L. *diagramma*, a scale, a gamut: Gr. *diagramma*, a plant, a list—from *dia*, *gramma*, a mark, a sketch—from *grapho*, I write]: a figure represented by lines, as a triangle, a square, etc.; a figure; a plan.

DIAGRAPH, n. *dī′ă-grăf* [Gr. *dia*, through, across; *grapho*, I write]: an instr. used in perspective drawing. DI′AGRAPH′ICS, n. plu. *-ĭks*, the art of designing or drawing. DI′AGRAPH′IC, a. *-ĭk*, or DI′AGRAPH′ICAL, a. *-ĭ-kăl*, descriptive.

DIAL, n. *dī′ăl* [mid. L. *dĭālis*, daily—from L. *dĭēs*, a day]: instrument for measuring time by a shadow thrown by the sun or by the moon or stars. DI′ALLING, n. the art of constructing dials. DIAL-PLATE, the face of a watch or

clock. Di'alist, n. a. constructor of dials.—A *sun-dial* is an instrument for measuring time by means of the motion of the sun's shadow cast by a stile erected on its surface. It is of very great antiquity, the earliest mention of it being in Isaiah xxxviii. 8; and until clocks and watches became common, it was in general use as a time-keeper. The art of constructing dials to suit any place and situation, then an important branch of mathematical study, is now an object more of curiosity than utility.

A dial consists of two parts—the *stile* or gnomon, usually the edge of a plate of metal, always made parallel to the earth's axis, and pointing toward the n. pole; and the *dial plane*, which may be of any hard substance, and on which are marked the directions of the shadow for the several hours of the day, their halves, quarters, etc. Dials receive various names, according, mostly, to the positions which

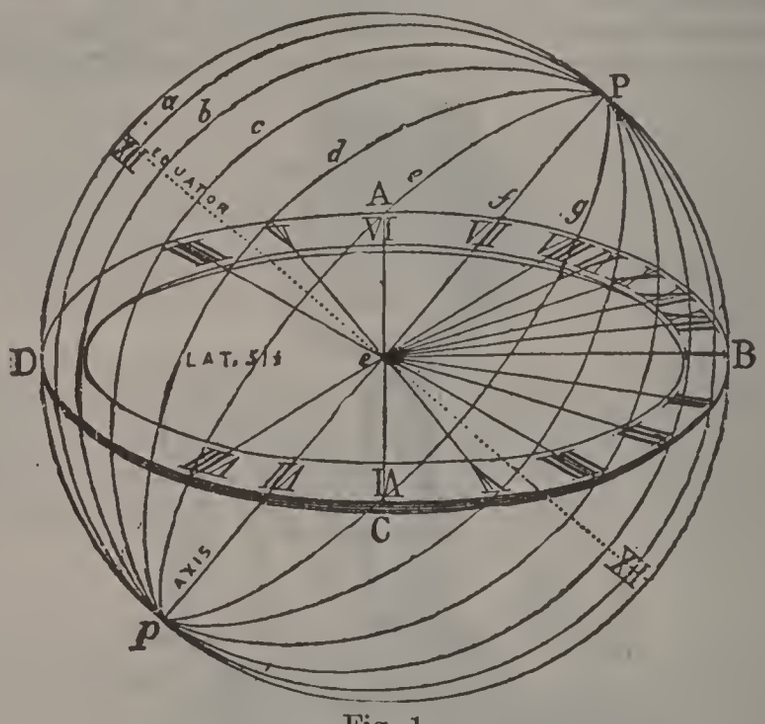


Fig. 1.

they are constructed to occupy. When the dial-plane is on the plane of the horizon, the dial is called a horizontal dial; when perpendicular to that plane, a vertical dial. An equinoctial dial is one whose plane is parallel to the equinoctial plane. Besides these names, there are others, such as the south dial, north dial, east dial, west dial, polar dial, declining dial, all depending on the position of the dial-plane. The cylindrical dial is a dial drawn on the curved surface of a cylinder. The ring dial is an ingenious small portable dial, but rather a curious toy than a philosophical instrument.

A *night* or *nocturnal dial* is an instrument for showing the hour of the night by the shadow of the moon or stars Moon-dials may be constructed relative to the moon's motion; or the hour may be found by the moon's shadow on a sun-dial by the following rule: Observe the hour pointed out by the moon's shadow; find the days of the

moon's age in the calendar, and take three-fourths of that number for the hours to be added to the time shown by the shadow to give the hour of the night.

Dialling.—The *stile* of a dial being parallel to the earth's axis, those familiar with spherical trigonometry will readily see that the problem of constructing a dial resolves itself into that of ascertaining where the hour-lines cut a given circle, with a view to the graduation of the dial-plane. For fuller information concerning the principles of dialling, here presented only in popular form, see Ferguson's *Lectures* (4th ed., 1772, Lecture 10), here made use of. Suppose *Pep* (fig. 1), a hollow and transparent sphere, as of glass, to represent the earth; and suppose its equator divided into 24 equal parts by the meridians *a*, *b*, *c*, *d*, etc., one of them passing through a

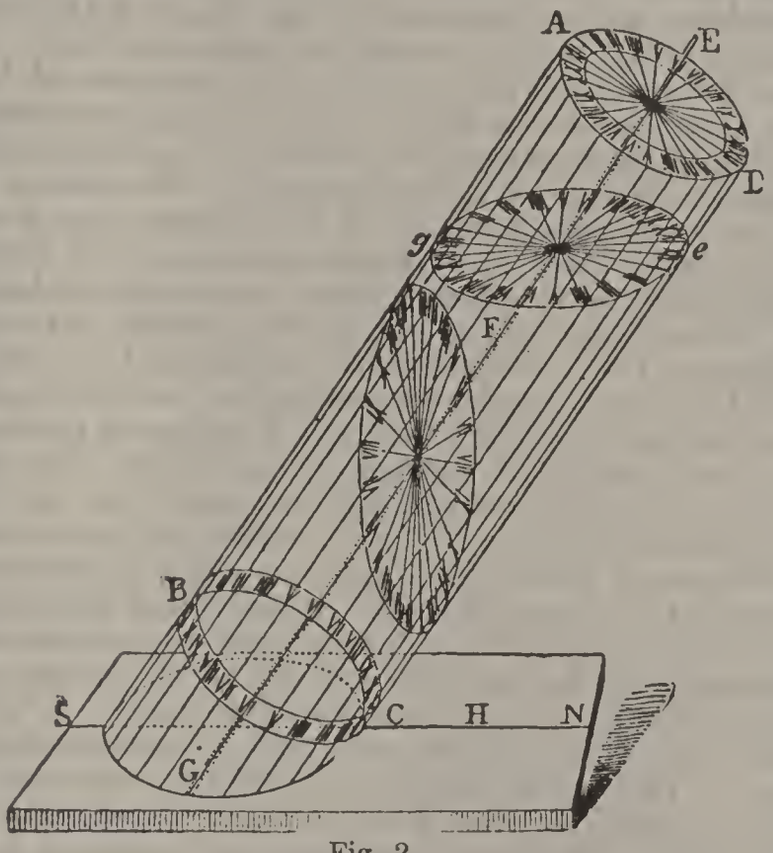


Fig. 2.

given place, say London (see HORIZON), at the point *a*. If the hour of XII. be marked at the equator, both on the latter meridian and that opposite it, and all the rest of the hours in order on the other meridians, those meridians will be the hour-circles of London, because, as the sun appears to move round the earth in 24 hours, he will pass from one meridian to another in one hour. Then, if the sphere has an opaque axis, as *Pep*, terminating in the poles P and *p*, the shadow of this axis would fall, in the course of the day, on every particular meridian and hour, as the sun came to the plane of the opposite meridian, and would thus show the time at London, and at all other places on the same meridian as London. If the sphere were cut through the middle by a plane ABCD, in the rational horizon of London, and if straight lines were drawn from

the centre, *e*, of the plane to the points where its circumference is cut by the hour-circles of the sphere, those lines would be the hour-lines of a horizontal dial for London; for the shadow of the axis would fall upon each particular hour-line of the dial, when it fell upon the like hour-circle of the sphere. Similarly, if we suppose the sphere cut by *any* other plane facing the meridian, the hour-circles of the sphere will cut the edge of the plane in those points to which the hour-lines must be drawn straight from the centre; and the axis of the sphere will cast a shadow on these lines at the respective hours. The like will hold of any plane, whether it face the meridian or not, provided it do not coincide with it, or do not coincide with a plane through the poles, and perpendicular to the plane of the equator. In the latter case, the axis would have no elevation above the plane of the dial; in the former, the shadow would not move circularly.

The *universal dialling cylinder*, an invention of Ferguson's, is represented in fig. 2. ABCD is a glass cylindrical tube, closed at both ends with brass plates, on the centres of which a wire or axis, EFG, is fixed. The tube is either fixed to a horizontal board, H, at an angle equal to the latitude of the place, or moves on a joint, so that it may be elevated till its axis is parallel to the earth's at any latitude. The 24 hour-lines are drawn on the outside of the glass, equidistant from one another, and parallel to the axis. The XII. next B stands for midnight; the XII. next the board, for noon. When the axis is adjusted for the latitude, and the board levelled, with the line HN on the meridian, and the end toward the north, the axis EFG, when the sun shines, will serve as stile, and cast a shadow on the hour of the day among the parallel hour-lines. As the plate AD is parallel to the equator, and EFG perpendicular to it, right lines drawn from the centre to the extremities of the parallels will be the hour-lines of an equinoctial dial, and the axis will be the stile. A horizontal plate, *ge*, if put into the tube, with lines drawn from the centre to the several parallels cutting its edge, will be a horizontal dial for the given latitude; and similarly a vertical plate fronting the meridian, and touching the tube with its edge, with lines drawn from its centre to the parallels, will be a vertical south dial, the axis of the instrument in both cases serving for the stile; and similarly for any other plate placed in the cylinder. If, instead of being of glass, the cylinder were of wood, any of these dials might be obtained from it by simply cutting it in the planes of the plates, and drawing the lines on the surface of the section.

DIALECT, n. *dī′ă-lĕkt* [F. *dialecte*—from Gr. *dialektos;* L. *dialectos*, speech, manner of speaking—from Gr. *dia*, *lego*, I choose, I speak]: the peculiar manner in which a language is spoken in a province or district of a country; style or manner of speech. Dī′alec′tic, a. *-lĕk′tĭk*, or Dī′alec′tical, a. *-tĭ-kăl*, pertaining to a dialect; logical. Dī′alec′tics, n. plu. *-tĭks*, the art of reasoning; the branch

of logic that teaches the rules and modes of reasoning. DI'ALEC'TICALLY, ad. *-lĭ*. DI'ALECTI'CIAN, n. *-tĭsh'ăn*, a reasoner; a logician. DIALECTOL'OGY, n. *-tŏl'o-jĭ* [Gr. *logos*, a discourse]: that branch of philology which deals with the nature and relation of dialects. *Note.*—DIALECT, in a country, is one of the numerous varieties of local speech on which its classical or literary language has been founded: *provincialism*, a word, phrase, or mode of speech peculiar to a district or province—thus really forming part of a *dialect*.—SYN. of 'dialect': language; idiom; tongue; speech; phraseology; provincialism.

DI'ALECT: particular local form or manner in which a language is spoken. In speaking of a people all having essentially one language, but an extensive territory, the name of Dialects is given to those varieties or peculiar forms which that language assumes among the various tribes or other local divisions of the people. The wider the separation and the greater the difference between the several tribes, in mode of life and other circumstances, the more marked will the difference of dialect become. Also when a particular tribe of this people increases in numbers, and extends its territory, the same process is repeated, and its dialect becomes broken into a number of sub-dialects. The principal check to this tendency to seemingly endless subdivision of language, is furnished by an increasing degree of common culture and civilization. Where this is wanting, as in Africa and among the native populations of America, the subdivision is practically endless.

Another element is introduced into the problem by the fact, that the civilization of some tribes develops itself more richly and ripens earlier than that of others, while some even undergo decline; this must occasion corresponding differences of dialect. Further, one dialect may become dominant over one or more of the others, through various influences, the chief of which is the power of poetry, especially if favored by external relations. Finally, if to superior manifestations of oratory and poetry in any dialect, the conservative aid of writing be added, there is created a written language, which passes current among other tribes to the same extent that the literature of which it is the vehicle finds favor. It is not always the dialect most perfect in itself, nor yet that of the most powerful tribe or division of a people, that comes to be the written language. Accidental circumstances have, in many cases, decided the rivalry. The Bible happened to be translated by a High German, Luther, into his native dialect; other works on the then all-engrossing subject of religion followed in the same dialect; happily, too, the art of printing had just attained the perfection necessary to give these productions general circulation. It was this concurrence of circumstances that decided that High German should in future be the spiritual bond among the wide-spread German people. For there were other dialects whose claims to the distinction were at that time equal, if not higher. See ENGLISH LANGUAGE.

When a dialect has thus become the vehicle of written communication, and of the higher kinds of oral address, its character and position become changed; and it stands henceforth in a sort of antagonism to the other dialects, and even to that out of which itself sprung. For written language is employed chiefly in the higher departments of human thought and activity. The intellectual and moral elements, therefore, predominate in it over the sensible; and what it gains in dignity, precision, and pliancy, it loses in richness of inflection, in friendly familiarity and naturalness. In conflict with this standard speech, the dialects must give place. They live for a considerable time, even in the mouth of the educated classes, becoming, however, gradually more and more confined to the most necessary and familiar forms of intercourse, and losing their characteristics in the stream of the written language. They thus become, after a time, the exclusive possession of the lower orders, in which position they preserve many relics of old grammatical forms long after these have disappeared in the language of literature, but without the power of advancing or of being enriched by the products of deep thinking, and though they may abound in single expressions of great beauty and delicacy, the general character comes to be low and coarse. But so long as a language lives, the literary standard and the dialects never cease to act and react on one another.

The chief points of difference between the dialects of a language and the standard fall under four heads. The first consists of differences in the elementary sounds or letters, each dialect having a tendency to substitute some one or more vowels or consonants for others. Thus, the standard English *bold*, is in Ireland *bowld;* in Scotland, *bauld; what*, where the *h* is nearly evanescent, becomes, in a Scotsman's mouth, or rather throat, *chwat*, and in Aberdeenshire Scotch, *fat—f* in this sub-dialect being regularly substituted for *wh*, or rather *hw*. 2. Each dialect has peculiarities of grammar: In many parts of England and in Scotland, the plural of *eye* is not *eyes*, but *eyen*, or *een*, like *oxen*. The habitual use of *be* where the standard grammar prescribes *am*, *is*, *are*, etc., is prevalent in large districts of England, and lingers in retired parts of New England. Of this kind is the use of the strong conjugation for the weak, or vice versâ; as *loup*, *lap*, *luppen*, for *leap*, *leaped*, *leaped*. 3. Peculiarities of vocabulary: These individual words current in one or more districts, but unknown to the standard vocabulary, are properly *provincialisms*. They are generally genuine words of an older stage of the language, that have survived longer in some localities than in others. Some provincialisms, as *bearn* or *bairn*, for child, *marrow* for fellow or match, to *greet* for to weep, are common to Scotland and the north of England. Others are more local, as to *cleam*, for to fasten or cement; *heppen*, a Yorkshire term for near; *thrippa*, in Cheshire, to cudgel. The exclusion of such words from the standard language is often accidental, and many of them

might be and are with advantage resumed; ex., *marrow, gloaming*, etc. 4. Peculiarities of intonation: This is sometimes, though with little propriety, called accent, which means strictly the stress laid upon a particular syllable of a word. There are no doubt local peculiarities strictly of this kind too. The tendency of standard English, especially the more recent, is to throw the accent toward the beginning of the word; in Scotland, the tendency lingers to say *envy' en'vy*. But peculiarities of intonation lie less in accent than in the different ways in which the *pitch* of the voice is managed—in the musical accompaniment of articulation. Differences in this respect give rise to the monotonous drawl of one district, the angry querulous tone of another, the sing-song of a third, etc.

So long as dialectic varieties of language were looked upon indiscriminately as corruptions and barbarities, they were noticed only by scholars and for avoidance. A more rational philology, without trenching upon the rules of good writing, now considers them as essential parts of the speech of a people, and a knowledge of them as necessary to any thorough investigation of the genius of that speech.

It is obvious that *Dialect* is entirely a *relative* term, and that what is called by that name in one connection, may be called a language in another connection. Thus, Greek and Latin may be called sister-dialects of that primitive language from which it is held that they, as well as the other members of the Indo-European family, branched off: see ARYAN (Languages). Greek considered by itself, however, it is a language; and Ionic, Doric, Attic, etc., are dialects of it. The same holds good with the others. In practice, however nearly related the speech of two people may be, the term dialects is not applied unless the peoples are mutually intelligible and have a common literary standard. Intelligibility is little considered, but political relations enter more or less into the notion. Thus, Scotch is sometimes spoken of as a distinct language from English, and yet in no part of Scotland is the common speech so unintelligible to an Englishman as is that of Somerset, which is always a 'dialect.' This arises from Scotland being still thought of as a separate country, which it formerly was; and its speech as the vehicle of a peculiar literature. See AMERICANISMS.—Dialect proper is not to be confounded with artificialities, such as the jargon or slang of thieves.—See PHILOLOGY.

DIALEC'TIC: a Greek word which signified originally 'the art of conversation,' but came to have a technical signification in the language of philosophy. At first, it implied a regular and scientific method of treating general conceptions or general terms. In the Socratic philosophy, and especially in that of Plato, dialectic was thus the method of the highest and deepest kind of speculation. Aristotle gave another signification to the word. According to him, a scientific proof or deduction is different from a dialectic proof, which is only a probable deduction. After this, dialectic came to imply a sort of word-fence, the

art of so using the forms of reasoning as to confound your opponent and make fallacies pass for truth. Dialectic is used sometimes as synonymous with logic. Logic, however, which originated with Aristotle, is properly the science of the forms of thinking; it is less directly concerned with words than dialectic, which in this view becomes a subordinate province of logic—the art of disputation. In the Kantian philosophy, dialectic is that phase of thought in which the insufficiencies of limited notions, which nevertheless take themselves to be final, are shown up. For example, space, time, causation, the atom have been regarded as ultimate truths and facts have been classified accordingly. Kant shows by the very simple method of unfolding their exact meaning that these conceptions can never be regarded as final. In like manner dialectic is to Hegel a stage in the development of the true method of philosophic research. The everyday man commonly regards facts and principles as independent entities just because he can distinguish them one from another. To this way of looking at the world Hegel gives the name of the 'logic of the Understanding.' Its essential error is that it persists in treating as though they were unrelated facts which have all manner of dependence one upon another. The destruction of this illusion is the task of dialectic. And this its task dialectic accomplishes by drawing out the true meaning of the fact and by showing its inherent relatedness. Thus on the one hand dialectic is a destructive process and on the other constructive. It breaks down the illusion of unrelatedness and prepares the way for the understanding of partial world-aspects through their relationship one to another and to the whole. It passes accordingly into the speculative aspect of method which is the building up of a positive view of the world upon the basis of thoroughgoing investigation.

DIALLAGE, n. *dī'ăl-lāj* [Gr. *dĭăllăgē*, interchange—from *dia*, *allasso*, I exchange one thing for another]: figure of speech in which arguments are first placed in various points of view and then turned to one point.—DIALLAGE, name that has been applied to many foliated minerals, but now chiefly to a finely laminated or a fibrous pyroxene of either the diopside or the augite varieties, and often resembling schiller-spar or bronzite, or changed to amphibole and then synonymous with smaragdite or uralite. It varies from gray green to bright green and to brown, and has a pearly surface, or sometimes metalloidal. Smaragdite is prized for ornamental purposes; in Corsica, it occurs disseminated in a felspar (*Labradorite* or *Saussurite*), which, when cut and polished, appears spotted with it, and is of great beauty, is made into boxes, vases, etc., is much valued, and is known by the names *Gabbro* and *Verde di Corsica duro*. Enstatite, when metalloidal, yellow or brownish, is sometimes called *Bronzite*. DIAL'LOGITE, n. *-jīt*, a mineral having a rose-red or flesh-red color, consisting chiefly of carbonate of manganese.

DIALLING, n.: see DIAL.

DIALOGUE, n. *dī′ă-lŏg* [F. *dialogue*—from Gr. *dia*, *logos*, a word; *lego*, I speak]: a conversation between two or more persons; formal conversation, as in a play; written compositions in which persons are represented speaking. Dialogue implies greater unity of subject and formality than ordinary conversation. The ancient Greek philosophers were fond of this way of conducting investigation and conveying instruction. The Socratic dialogue is a conversation in the form of question and answer, so contrived that the person questioned is led himself to express those ideas that the questioner wishes to bring before him. The dialogues of Plato are, as it were, philosophical dramas, in which the Socratic method of investigation is brought to bear upon speculative subjects. Of the more eminent modern writers in this form, are Erasmus in Latin; Lessing, Herder, and Wieland among the Germans; Petrarch and Machiavelli in Italy; Fénelon and Fontenelle in France; Berkely, Hurd, and Harris in England. Landor's *Imaginary Conversâtions* are a happy effort of this kind. When dialogue is combined with action, the result is the drama. DIALOGUE, v. in *OE.*, to confer or discourse with another. DIALOGISM, n. *dī-ăl′ŏ-jĭzm*, a feigned conversation or discussion between two or more persons. DIAL′OGIST, n. *-jĭst*, one who speaks or writes in a dialogue. DIAL′OGIS′TIC, a. *-jĭs′tĭk*, or DIAL′OGIS′TICAL, a. *-jĭs′tĭ-kăl*, having the form of a dialogue. DIALOGICAL, a. *dī-a-lŏj′ĭ-kal*, pertaining to or of the nature of a dialogue. DIAL′OGIZE, v. *-ŏ-ī-z*, to discourse in dialogue.—SYN. of 'dialogue': conversation; colloquy; conference; discourse.

DIALOGUES OF THE DEAD, satirical dialogues by Lucian (q.v.), written at Athens during the 2d c. The scene is laid in Hades. Among the characters referred to are: Menippus and Diogenes, the Sophists, and the Cynics, Aristotle, Alexander, Socrates, and Crœsus .Lord Lyttelton also wrote *Dialogues of the Dead*, introducing Cortez, William Penn, Ximenes, Wolsey, Boileau, and Pope; and Fontenelle's *Dialogues des Morts* embodies a similar idea.

DIALYCARPOUS, a. *dī′ăl-ĭ-kâr′pŭs* [Gr. *dialūō*, I part asunder; *karpos*, fruit]: in *bot.*, having a pistil or fruit composed of distinct carpels. DIALYPETALOUS, a. *dī′ăl-ĭ-pĕt′ă-lŭs* [Gr. *petalon*, a leaf]: having corollas composed of several petals. DIALYSEPALOUS, a. *dī′ăl-ĭ-sĕp′ă-lŭs* [Eng. *sepal*]: having a calyx composed of separate sepals; also DIAPHYLLOUS, a. *dī-ăf′ĭl-lŭs* [Gr. *phullon*, a leaf]: in same sense.

DIALYSIS, n. *dī-ăl′ĭ-sĭs* [Gr. *diălŭsis*, a dissolving or dissolution—from *dia*, *lŭō*, I loose]: a mark in writing or printing placed over one of the two vowels of a diphthong to show that the vowels are to be pronounced separately; in *chem.*, a process of analysis of a liquid by diffusion through organic membranes, or such artificial septa of organic matter as parchment-paper; the separation of crystallizable from uncrystallizable substances, a septum allowing the passage of the former and not of the latter (see OSMOSE); in

bot., the separation of parts usually joined. DIALYZE, v. *dī′ăl-īz*, to analyze by diffusion through organic membranes, or through parchment-paper. DI′ALYZ′ING, imp. DI′ALYZED, pp. *-īzd*. DIALYSATE, n. *dī-ăl′ĭs-āt*, the result obtained by dialysis. DI′ALY′ZER, n. *-lī′zẽr*, the instrument employed. DI′ALYZ′IC, a. *-lĭt′ĭk*, pertaining to.

DIAMAGNETIC, *dī′ă-măg-nĕt′ĭk:* the property possessed by certain substances, such as bismuth, antimony, phosphorus, of offering an opposition to the passage of magnetism through them, which opposition is greater than that of air.

DIAMANTINA, *dē-â-mân-tē′nâ*, Brazil, a city lying somewhat north of the centre of the state of Minas Geraes, in a region formerly well known on account of its abundant production of diamonds. At the present time the wealth of the state is derived from agricultural and manufacturing industries; nevertheless Diamantina continues to prosper, being well situated with reference to the Sao Francisco River system, and the routes of travel between Rio de Janeiro and the interior. Its climate is good, owing to its elevation above sea-level (about 4,000 feet). Pop. (1901) 14,000.

DIAMANTI′NO RIVER: significantly named, in the diamond districts of Brazil; apparently an affluent of the Paraguay, and, through it, of the Plata. It rises in the province of Matto Grosso, and is joined by the Ouro 70 m. n.n.w. of Cuyaba. At this confluence is a town named Diamantino; pop. 4,500.

DIAMETER, n. *dī-ăm′ĕ-tẽr* [OF. *diametre*, a diameter—from Gr. *diam′ĕtros*, a diagonal, a diameter—from *dia*, through; *metron*, a measure]: the measure of a body through from side to side; a straight line passing through the centre of a circle, terminated at both ends by the circumference. In geometry, diameter is generally used in speaking of curves, and its most general definition is the locus of the middle points of all parallel chords of a curve. In the circle, ellipse, and hyperbola, all diameters pass through the centre, and are there bisected. Only the circle has all diameters equal; and each bisects the chords at right angles to it. In the ellipse, this last is the case with only the two diameters called the major and minor axes. In the parabola, all diameters are parallel to the axis. The term diameter is also used in the case of solid bodies. In the sphere, lines passing through the centre are diameters, and so in the ellipsoid; they all are bisected in the centre. DIAMETRICAL, a. *dī-ă-mĕt′rĭ-kăl*, straight; direct. DI′AMET′RICALLY, ad. *-lĭ*.

DIAMICTON, n. *dī-a-mĭk′ton* [Gr. *dia*, through; *miktos*, mixed]: the Roman method of building a wall, with regular ashlar work on the outsides, and filled in with rubble between. It is similar to emplecton, but without the diatoni or binding-stones, which go through the thickness of the walls, showing on both sides.

DIAMOND.

DIAMOND, n. *dī'ămŭnd* [F. *diamant*—corrupted from L. *ădămas*, the hardest metal, diamond: Gr. *ădămas*, diamond, something unsubduable]. The hardest and one of the most brilliant and beautiful of gem minerals; a rhombus, i. e. a four cornered figure having two acute and two obtuse angles, a shape common to the small panes used in leaded glass church windows; the infield on base ball grounds marked at the four corners by bases usually 90 ft. apart; one of a suit of playing cards which is marked with the red rhombus; the smallest kind of type ordinarily used in printing. DIAMOND BEETLE (*Entimus imperialis*), a South American beetle of splendid lustei and color and often 2 in. long. DIAMOND BIRD (*Pardalotus punctatus*), a small, black, white-spotted Australian bird. DIAMOND CUTTER, a cutter for glass made by partially imbedding a diamond in the end of a tool in such a manner that a natural crystal edge protrudes slightly. DIAMOND DRILL, a tool most commonly used for boring through rock and made by setting crude diamonds in the end of a tube. The tube is twisted with a slight jar and the diamonds wear away the rock. DIAMOND GROOVE, a groove of V section used in iron working. DIAMOND MORTAR, a hard piece of steel with a flat bottomed cavity (about ½ in. deep and as large around as a half dollar) into which fits a short steel cylinder, used for pulverizing hard substances.

DIAMOND: of all minerals the one most universally employed as a gem because of its enduring beauty, and most useful for difficult drilling and cutting because of its hardness.

Since it is the hardest of all substance (No. 10 in the scale) when polished it retains a surface free from scratches longer than could any other gem. It does not oxidize (rust) nor yield to ordinary gases or solvents and being so stable chemically is thus additionally suitable for use as a jewel.

The brilliancy, sparkle or 'life' of the diamond is due to its high refraction (q.v.). A ray of entering light is bent very far from a straight line and hence an unusually large number of rays are gathered up by the diamond and reflected upon inner surfaces and cause it to have an extraordinarily brilliant appearance (angle of refraction 2.4).

The diamonds most prized as gems are the colorless or so called white stones. The colors which they show—flashing reds and blues—are prismatic colors due to the fact that each ray of entering light is divided, the red end of the spectrum vibrating slowly reaches a different spot from that attained by the rapidly vibrating blue end. This separation is called *dispersion*. (Angle of dispersion for diamond is .06.) It is high. For example in quartz, which is a mineral clear like the d. it is only about one-third as high (.02) and hence quartz lacks the 'fire' of the diamond. One mineral only (crocoite) has as great power of dispersion as the diamond. But no gem has its combined powers of reflection, refraction and dispersion.

A large proportion of the diamonds mined are yellow or

brown. Red, green, blue and purple stones are also found. That these colors are not due to organic coloring matter but rather to metallic oxides—such as iron oxides—is shown by the fact that the color does not disappear upon heating. Stones of fine red or blue color are the rarest and hence most valuable. The famous Hope diamond is as blue as a fine sapphire.

The composition of the diamond is pure carbon. It is infusible in an ordinary flame but when burnt in the presence of oxygen at a high temperature (900° C) it forms carbonic acid gas (CO_2). The traces of ash remaining consist of impurities such as silica, lime, magnesia and iron.

The diamond weighs about 3.5 times as much as an equal volume of water and is thus heavier than some other transparent substances which it resembles, for example glass (Sp. G. 2.5), quartz (Sp. G. 2.6), phenacite (Sp.G.2.9). Its high luster is so marked as to stand as a type known as *adamantine* luster. It becomes positively electric with friction but shows very slight electricity upon heating

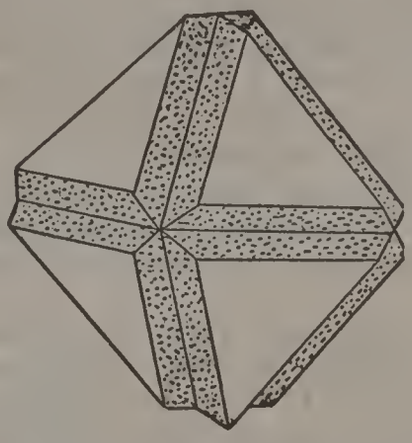


Fig. 1.—Common Form of Native Diamond.

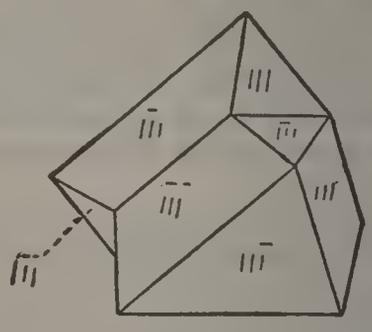


Fig. 2.—Common Form of Native Diamond 'Spinel Twin' or 'Suture Stone.'

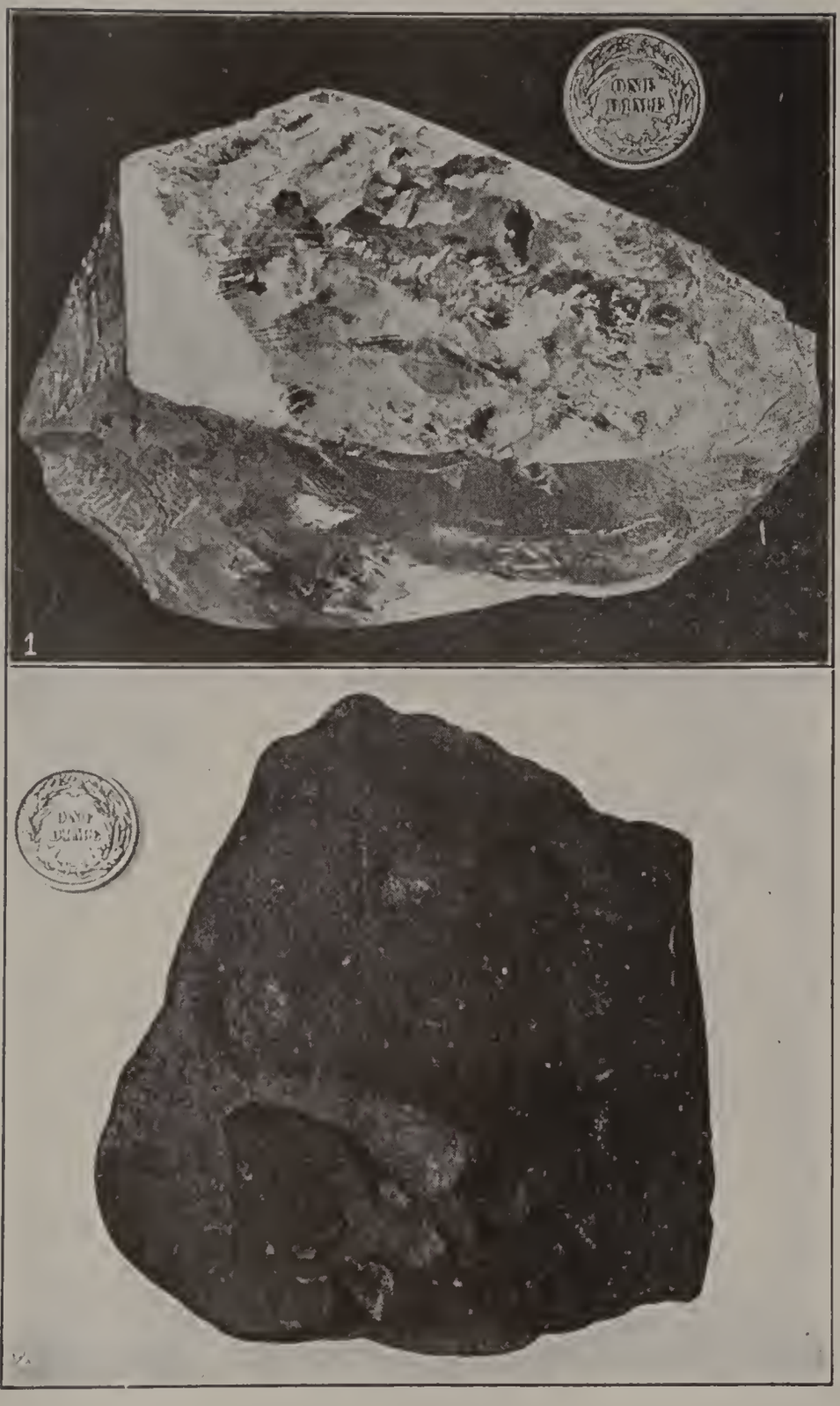
(pyro-electricity). Some bluish diamonds after being exposed to sunlight emit light when placed in the dark. (Phosphorescence.)

One of the most striking and characteristic things about the native diamond is its shape. Before men learned to cut it they wore it as it was found.

The accompanying figures represent the commonest forms and would aid one to recognize a diamond if he found one. All the forms agree in this that they occur in what is known as the 'regular system' in crystallography (q.v.). One of the most beautiful forms is that shown in Fig. 1. In general appearance it resembles two pyramids base to base forming an octahedron. But the grooves at the edges where an octahedron would have sharp edges show that the form is the result of interpenetration of two supplementary tetrahedrons.

Flat stones with re-entering angles are very common and are formed by twinning parallel to the octahedral face. Crystallographers call them 'spinel twins' and dealers 'suture stones.' (Fig. 2.)

DIAMOND.



1. The Cullinan, the largest Diamond ever found; weight 3,025 carats.
2. Largest Carbonado ever found; 3,078 carats. Found in Brazil in 1895.

Often thin layers of these are repeated, building up a terraced-like mass. Some diamonds are cubical in form. A common form is that which shows six faces or portions replacing the octahedral (tetrahedral) plane and producing a more or less rounded crystal. (Fig. 3.) The simple form is called a hexatetrahedron. When two such forms are interpenetrated a globular crystal results. Many of the round crystals called 'bort' show a radial structure.

All of these forms and the others which are not so common are constructed upon the same plan. The composing molecules are all alike and vibrate the same distance and with like ease in all directions. Consequently light can penetrate the diamond with the same speed in all directions. The same is true of heat, electricity or any other mode of motion. Its architecture is regular.

It cleaves or splits in a direction parallel to the octahedral face with such ease that it is difficult to obtain a break

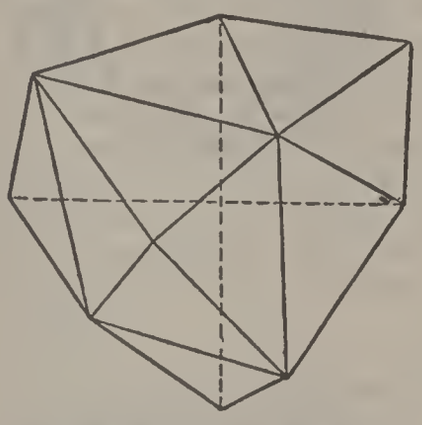


Fig. 3.—Common Form of Native Diamond. A Hexatetrahedron.

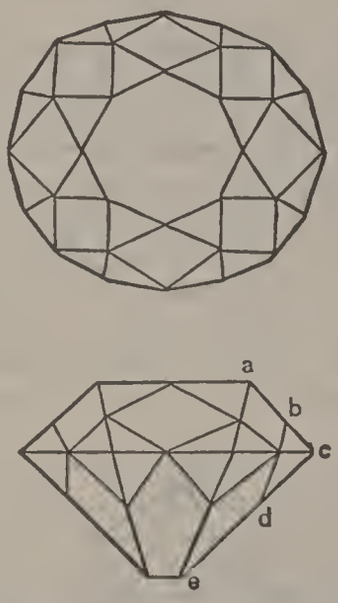


Fig. 4.—Top and Side View of Brilliant Cut.

or fracture in any other direction. However, when fractured the surfaces are pitted and rounded like a shell and are hence said to be conchoidal.

Pliny said that the only way to 'subdue' the diamond is to dip it in warm goats' blood and it was a popular tradition for centuries that if a diamond were laid upon an anvil and struck with a hammer both anvil and hammer would fly to pieces before the diamond was broken. Fine gems have been lost because of this myth. Although so hard the diamond is brittle. Tenacity and hardness should not be confused.

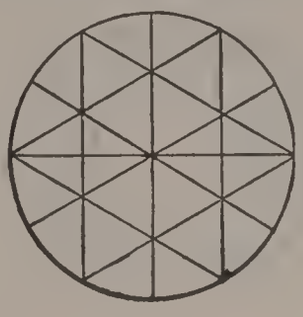
The natural form of the diamond is of more importance than is the shape given it by skillful lapidaries since the natural form is fundamental and decides the character of the minutest fragments as well as the clearly marked crystal.

The art of cutting diamonds is said to have been prac-

ticed in India and China long before Louis von Berguen of Bruges discovered the process for Europeans (latter part of 15th c.).

Until recently Amsterdam and London were the leading diamond cutting centers of the world. In Amsterdam more than 3,000 men are engaged in the industry. Within the last few years the number of men engaged in diamond cutting has increased so rapidly in the United States that Boston and New York now rival the older centres. American invention in methods of cutting and polishing have added to the ease and perfection of the work and the value of the product. In cutting and polishing diamond dust applied to metal strips and disks is used. The dust is mixed with oil and applied to the disks which are revolved as rapidly as 3,000 revolutions per minute for the polishing.

The commonest and most satisfactory cuts are the *Brilliant, Rose* and *Table.* The most popular of these is the



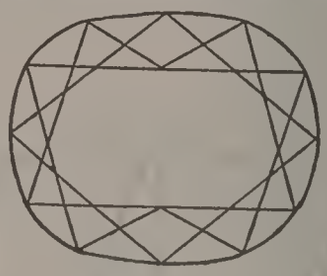


Fig. 5.—Top and Side View of Rose Cut.

Fig. 6.—Top and Side View of Table Cut.

brilliant, since it refracts and reflects the light best. It is employed in cutting the best shaped stones.

On the top (Fig. 4) is the *table* or principal face *a* surrounded by a number of sloping facets forming the *bizet b.* These end about $\frac{1}{3}$ of the distance from top to bottom at the *girdle c.* Below the girdle elongated facets slope together so as to form a point were they not truncated by a small face parallel to the table above and called the *collet e.* These elongated sloping facets are called the *pavilion d.*

The *rose* diamond (Fig. 5) is entirely covered with facets above the girdle and is flat below.

The *table* cut (Fig. 6) is flat both above and below. It has a large square face encompassed by four smaller ones. Stones too thin for either of the above cuts are given this one.

In former times the aim of the lapidary was to leave as large a stone as possible even though the shape produced did not bring out the full beauty of the stone and many of

the diamonds which are historically famous are odd in shape. Some are oblong, prismatic, pear or heart shaped, or egg shaped with one end truncated. Some were left with large grooves or flaws in them. Today the cutter usually endeavors to produce as perfect a form as possible. This is a distinct gain since the gem itself is more valuable and fragments are employed in various ways. If not too minute, they are used in shallow settings. If very fine, they are powdered and used for cutting and polishing material. This too is the chief use of diamonds of poor color and form. They make good cutting tools. The most useful diamonds for small and large drills are *bort* and *carbonado*. Bort has radial fibrous structure, curved drusy surface and is often dark in color.

Carbonado is compact, somewhat porous, without cleavage, black and opaque. It makes the best diamond drills. With these drills it is possible for the prospector to rapidly penetrate the hardest rocks.

Diamonds have been found in nearly every part of the globe yet for some cause or other in quantities worth mentioning only in regions less than 30° from the equator. A line following their most abundant occurrence would begin in southeastern Australia, extend eastward to South America; there, dividing into two branches, would pass in one branch north of the equator to British Guiana, and in the other, south to Bahia in Brazil. The northern branch extended would finally reach India, most prolific of ancient localities, and the southern branch would reach South Africa at Kimberley, the most productive of modern regions.

In India, diamonds were first found and prized as gems. Most of the famous historical gems came from there. That field is now practically exhausted. The New South Wales fields yield about $60,000 worth a year, British Guiana twice that amount, and Brazil five times that amount, while South Africa so far surpasses these regions as to make them hardly worth mentioning. It easily produces $25,000,000 worth annually.

In all of the regions enumerated above, diamonds are found in sands and gravels or in rock formed by their cementation (sandstone and conglomerates). Such occurrence gives little suggestion as to their origin. It shows simply that they have been transported from some original rock together with the enclosing gravels. By reason of their hardness, they have been able to resist the grinding experienced during transportation.

In the Kimberley region, they occur in a greenish blue breccia called *kimberlite*, a rock composed of fragments of shale, igneous and metamorphic rocks. Among these metamorphic fragments is one called *eclogite*. It consists of red garnet, green pyroxene, brown mica, and black ilmenite. In a garnet in a piece of eclogite a diamond was found. This and other facts point to eclogite as the parent rock of the diamond and lead to the conclusion that the d. is formed under great pressure, heat, and prob-

ably in the presence of water. The kimberlite occupies crater-like basins a quarter of a mile in diameter and of unknown depth, in the triassic rocks which extend over the region. The craters were the basins of mud volcanoes.

A few diamonds have been found in the United States in various localities. Those reported in the middle States have been brought from northern regions in glacial drift.

Meteorites often contain minute diamonds.

Some diamonds are of such unusual size or value or have been so long known and so associated with the renowned of the earth as to have become of great historical interest. The Kohinoor (106 carats, valued at more than $500,000), found in India 600 years ago and for centuries fought for by princes and kings, is now exhibited among the English Crown jewels. It stands in literature as the synonym of value.

In the Louvre, the visitor can see the Regent (136 carats, valued at $900,000). It has had a most eventful history from the time when it was found in India by a slave, stolen from him by a sailor, bought and sold at ever increasing price till it came to sparkle in the hilt of Napoleon's sword, and finally as one of the gems of the French Republic to be open to the view of the people in the priceless collection of the Louvre.

Then there is the Florentine (133 carats) in Vienna; the Orloff (194 carats), in St. Petersburg; the green Dresden diamond (48½ carats); the blue Hope diamond (44¼ carats), which with the Regent was stolen from the Tuilleries in 1792 and is now in England; and the beautiful red diamond (10 carats) of the Czar Paul in St. Petersburg. The largest diamond in America is the yellow Tiffany diamond (125⅜ carats) in New York. Up to 1905 the largest diamond ever found was the Excelsior, found in Jägersfontein, South Africa, in 1896, weighing 971 carats (i. e. about 6 oz.) and being about 2¾ inches in length. It was cut into ten stones furnishing a total of 340 carats of the whitest material of any of the large diamonds and with a total value of about $400,000.

In January, 1905, at the Premier mine in the Transvaal the surface manager saw the sparkle of a large white mineral which proved to be the largest diamond heretofore found. It is a beautiful blue white stone 4 by 2.5 by 2 inches and weighing about 3025 carats or 1.37 pounds avoirdupois! That it is a fragment of a larger crystal is evident from the cleavage surfaces. The front face is a cleavage surface. The largest carbonado ever found, weighing 3078 carats, was found in Brazil in 1895.

The value of the diamond depends upon the color, transparency, size and perfection of form. Increase in size, other things being equal, increases the value in geometral ratio. The price asked by dealers varies somewhat with the financial ability of the would-be purchaser. The prices in America have been higher than in Europe. The price of a one carat stone of the 'first water' and best cut

in this country is about $225.00. The tendency of the price is to rise. However, the statement that 'diamonds are a good investment,' while true in regard to the stability of the diamond physically, is more or less of a fiction since they are not legal tender and the unprofessional seller will probably obtain about 50 per cent. of what he paid. The finest rubies have long been valued more highly than diamonds. They are rarer.

DIAMOND MINING: The mining of diamonds furnishes an epitome of the mining industry in general since it has passed through all stages from that characterized by primitive methods to that in which the highest organization, the greatest skill and the most extensive machinery are utilized.

In India, Australia and South America it is still carried on in primitive fashion. Gravel is dug with pick and shovel, carried in baskets or barrows to pool or stream of water, pulverized, worked and sorted by hand. In some places the water is thrown onto the gravel with bowls or the gravel is put in a 'cradle' and rocked, or sluice boxes are used just as in gold mining. Modern methods are being introduced in Australia and South America, but in South Africa the industry has reached enormous development so that 98 per cent. of all diamonds in the market are produced in what may be called the Kimberley region. Since the discovery of diamonds in that region (1867) more than $300,000,000 worth of diamonds have been produced. After cutting they are worth more than $600,000,000.

The children of Daniel Jacobs, a Boer pioneer, found near Hopetown, Orange River, a bright stone which proved to be a diamond worth $2,500. The news spread; prospectors rushed in; other finds were made; within three years thousands of men from every quarter of the globe were at work at Kimberley, old Debeers, DuToits Pan, and Bultfontein—all within a radius of about 3 miles. Kimberley was most productive and its fame spread around the world. Its history is typical of the region.

The diamond bearing ground extends over an elliptical space of about 33 acres in extent. By 1871, 1,600 claims, each 31 ft. square, were being worked. Each man dug out the earth on his small plot, carried it to the side, pulverized it with a shovel, sifted it through a wire sieve and looked for diamonds. The wind would catch the dust and almost stifle the workmen. The deeper the mines were worked the more the country resembled a ruined city. The dirt from one claim would fall into a neighboring one and some claim holders could not get their dirt out without crossing other's property. Quarrels and lawsuits were begun. The days of individual mining were numbered. Then two men began to buy up individual claims and organize companies and eventually they obtained control of the whole industry. They were Barney Barnato and Cecil J. Rhodes.

When the ground in the Kimberley crater had been removed to a depth of one or two hundred feet windlasses

were erected on the rim and hundreds of cables were stretched to different parts of the workings. During the day multitudes of cars laden with the diamond bearing blue earth were drawn up through the air and dashed back with shuttle-like speed. At night in the moonlight the cables glistened and the pit resembled a giant spider web.

When the excavation reached a depth of 400 ft. the walls began to fall in faster than all the cars could haul the debris out. By '89 a million dollars had been spent in removing the fallen material. The days of open mining were doomed. Then shafts were sunk, at first in the bottom of the quarry, then later in the solid rock some distance from the rim.

The shafts have now reached a depth of more than 2,500 ft. At every 40 ft. level, drifts are run through the productive ground. The ceiling is worked out till all the ore has been obtained and the refuse rock (reef) begins to come into the tunnel. The operation is repeated step by step in each lower level. In this manner all of the blue ground in the 33 acres is being removed and the debris which has fallen into the open quarry is allowed to remain, constantly sinking and increasing in amount however much it may.

The ore is hauled in iron tubs to the surface and then taken in cars that run by trolly to the mile long fields or 'floors' where it is allowed to lie exposed to rain, wind and sun for several months to 'season.' The disintegration is hastened by steam rollers which are run over it. Then the softened ground is crushed, placed in large tubs fitted with revolving comb-like arms, thoroughly washed and sent to the 'sorter.' Until recently men were employed to look over the washed 'concentrates' and pick out the diamonds. But they would miss some. And the men were guarded lest they might misappropriate the gems. Today the sorting is done by 'Kirsten's Greaser'—a series of gently sloping boards covered by a heavy grease which collects diamonds and some other gem minerals from the mud and slime which is slowly washed over the gently agitated boards. This kind of a sorter never fails to find the diamond however small or discolored. About 8 per cent. of the gems recovered are of the first water; 25 per cent. are good; 20 per cent. fair; and 47 per cent. small or bort. They are then ready for the appraiser.

DIAMOND, Artificial: facsimile of a native diamond made in a laboratory or cut or molded from various substances. The high price, universal popularity and knowledge of the simple chemical composition of the diamond, have led many men to costly and tedious experiments to discover a means of producing it artificially. Artificial diamonds have been made most successfully by Henri Moissan by heating carbon dissolved in iron in an electric furnace at enormous degree of heat and then plunging the mass of molten material into water. The diamonds are small but well crystallized. These artificial diamonds do not promise to supplant natural diamonds since they cost about $4,000 per carat. The most common counterfeits

are of rock-crystal and glass, the latter being technically known as 'paste.' These are not so hard nor so brilliant as true diamonds; but when mounted in small polished cups or provided with a backing of tin foil they throw out considerable sparkling light and are quite attractive. The artificial diamond is largely used in finger and ear rings, breastpins and studs, and some are so cleverly cut and polished that they would deceive any one not an expert. Within a few years it has become quite common for ladies possessing true crystals of value to have their jewelry sets exactly duplicated with 'paste stones' and these are worn in crowds and at places where the owners would be unwilling to expose the genuine ones.

DIAMONDBACK TERRAPIN (*Malaclemmys palustris*). This far-famed turtle belongs to the family *Emydidæ* and may be recognized by the unhinged plastron or lower shell, the concentric grooves and ridges which mark each plate of the upper shell or carapace, the smooth unnotched jaws, smooth skin covering the head, and dark olive or black color. Unlike most terrapins, the diamondback inhabits salt and brackish waters, living in the marshes which fringe our seacoast from Cape Cod to Texas. Formerly very abundant throughout this region, the constant extensive fishing to supply the markets has greatly reduced its numbers, so that the problem of its artificial propagation is now being taken up seriously. The principal fisheries are in Chesapeake Bay and on the coasts of New Jersey and North Carolina. Although a considerable number are dug from the mud while hibernating, a much larger proportion are captured by means of traps, seines, etc., during the summer months, and are confined in pens, where they are fed on oysters, fish, and celery to fatten them for the winter market. From the point of view of the epicure, the diamondback is perhaps the most famous and esteemed product of American waters, and during the season of greatest demand commands almost fabulous prices. Those commonly sold have a length of shell of from five to eight inches, and are supposed to be from 6 to 10 years old. The habits differ but little from those of other terrapins. They are omnivorous, lay their eggs in June and July in small nests excavated in some warm sandy bank, and hibernate during the winter after burying themselves a few inches beneath the mud. See TERRAPIN.

DIAMOND BEETLE (*Curculio imperialis*): coleopterous insect of the tribe to which the name WEEVIL is generally appropriated, but remarkable for the splendor and exquisite beauty of its colors, in which it is thought to be unrivalled even among coleopterous insects. It is of a golden-green color, with two black longitudinal bands on the thorax, and several rows of depressed spots on the elytra (wing covers), which exhibit a beautiful and sparkling green with intervals of black. It is a native of warm parts of S. America.

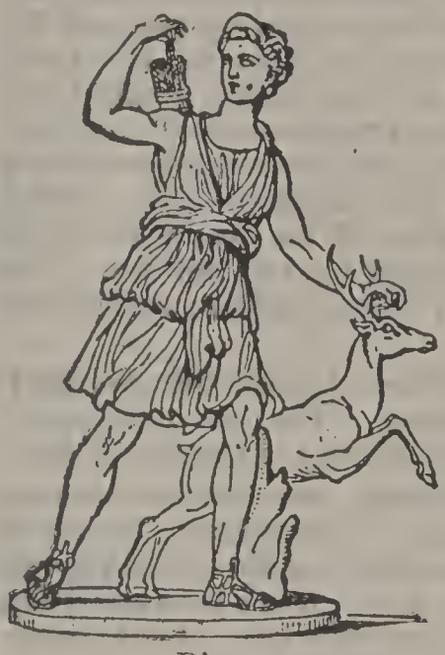
DIAMOND HARBOR, *dī'a-mond hâr'bor:* the port of Calcutta for large ships; on the left side of the Hoogly, about 30 m. below Calcutta, with which it is connected by an excellent road and by electric wires. As the adjacent country is swampy and unhealthful, the spot is marked by only a few native huts. The commercial value of the locality, however, is likely to increase, in proportion as the silting up of the river above impedes the upward navigation.

DIAMOND NECKLACE, THE: wonderful piece of jewelry, made in Paris about 1775, and intended for Madame Du Barry, favorite of Louis XV. She, however, was excluded from court on the death of Louis (1774), before the necklace was finished. After being made, this beautiful ornament, adorned with 500 diamonds, was discovered to be so costly that no one could purchase it. It was valued at 1,800,000 livres, which in present money is equal to about £80,000, or nearly $400,000.

The Prince Cardinal de Rohan, a wealthy, vain, and profligate man, persuaded by a woman named De Lamotte, who waited about court, that the queen (Marie Antoinette) regarded him with an eye of favor, became so infatuated with the idea, that he was ready to do anything, however extravagant, in order to preserve this feeling in the queen. De Lamotte had stated to the cardinal that the queen was desirous of obtaining this glorious necklace, and that not having sufficient money just then, she would sign an agreement to purchase it if the cardinal would become security. The cardinal consented. The agreement was approved and signed with the royal signature, as also with that of the cardinal, who, 1786, Feb. 1, carried the treasure to Versailles, where it had been agreed that the queen should send for it. On the following day, a person, dressed in the uniform of one of the court valets, entered the apartments of the cardinal, and repeating as he entered the words, *de par la reine*, 'in the name of the queen,' he advanced to the table whereon the casket containing the treasure lay, and bore it away. In a few days De Lamotte, her husband, and the *soi-disant* valet, all having disappeared from Paris, were busily engaged separating the diamond necklace into portions, and selling them. The whole transaction had been a trick; the messages from the queen, verbal and written, were without foundation, the latter, indeed, being forged by the 'valet,' who was skilled in imitating handwriting. The plot was discovered by means of the maker of the diamond necklace, who, not receiving any money when the period of the first instalment had arrived, went to court, demanding to know if the necklace had been delivered to the queen. In a few months the cardinal found himself in the Bastile, where those by whom he had been duped had been already sent. In 1786, May, the trial of the prisoners was brought to a close. De Lamotte was branded on each shoulder with the letter V (for *voleuse*, thief), and was sentenced to be imprisoned for life. All the others were acquitted. The queen was

falsely supposed by the populace of Paris to have been implicated in the plot, and the odium resulting from it was cast upon her, even at the last, when she sat on the cart that bore her through a raging and cursing mob to the guillotine.

DIANA, n. *dī-ă′nă* or *dī′ā′nă:* in *anc. myth.*, Roman goddess, corresponding in most of her attributes to the Grecian Artemis. According to the myths, she was daughter of Jupiter and Latona, and twin-sister of Apollo. She was born, with her brother, on Mount Cynthus, in the isle of Delos, which till then had been a floating island, but was fixed by Neptune in its present place, that Latona might there give birth to her children in peace and safety from the persecutions of the jealous Juno. Diana was worshipped by Greeks and Romans alike, as both a destroying and a preserving goddess. In the former capacity, she was represented as a full-grown virgin, armed with bow and arrows, with which she avenged herself on her enemies; as a preserving deity, she watched over the sick, and helped the unfortunate. Young girls, and women in childbirth, were the objects of her special care. She was herself beyond the allurements of love; and the ministers of her worship were vowed to lives of the strictest chastity. As sister of the sun-god Apollo, Diana was regarded as the goddess of the moon; hence her Greek name *Selene*, and her Latin name *Lucina* and *Phœbe*. Her worship was conducted with splendid rites in different cities. Her temple at Ephesus was one of the seven wonders of the world: see EPHESUS. In Tauris (the Crimea), she was propitiated with sacrifices of human victims; and before her statue at Sparta, the public scourging of the Lacedemonian youth used to take place. In Arcadia, she was looked upon as the special patron of hunting, and all sylvan sports, and as such was represented in Greek works of art as a tall and handsome maiden, with long hair floating down her neck, drawing an arrow from her quiver with one hand, and with the other holding in a struggling deer. As goddess of the moon, she wears a long robe reaching to her feet, and bears on her brow a crescent moon.



Diana.

DIANA-MONKEY (*Cercopithecus Diana*): the *Simia Diana* of Linnæus, or Palatine-monkey of Pennant: an African species of monkey, so named from the crescent-shaped band resembling that which poets and mythologists assign to the goddess Diana.

DIANCHORA, n. *dī-ăng'kor-a* [*di*, twice, twofold: Gr. *angkura*, an anchor, a hook]: genus of fossil *Conchifera*, now called *Spondylus*.

DIANDRIAN, a. *dī-ăn'drĭ-ăn*, or DIAN'DROUS, a. *-drŭs* [Gr. *dis*, double; *aner* or *andra*, a man]: in *bot.*, pertaining to the class of plants DIAN'DRIA, n. *-drĭ-ă*, having two stamens.

DIANE DE POITIERS, *de-ân' dėh pwâ-te-ā'*, DUCHESSE DE VALENTINOIS: 1499, Sep. 3—1566, Apr. 22; b. France: mistress of King Henry II. She was married to Louis de Brézé, Count of Maulévrier, and grand seneschal of Normandy 1512; attached to the court of Queen Claude, where she prevailed on Francis I. to spare the life of her father, under sentence of death for favoring the escape of the constable of Bourbon; left a widow with two daughters 1531; and when nearly 40 years old became the mistress of the dauphin. The court was ruled by her and the Duchess d'Étampes, the favorite of Francis, till 1547, when the dauphin succeeded to the throne, created her Duchess of Valentinois, sent her rival into exile, and permitted her the actual exercise of royal power and a decisive voice in the foreign affairs of the country. She exerted the utmost influence over the king till his death, and then retired to the palace at Anet built by him for her. She was a woman of great beauty, large intellect, and active philanthropy.

DIANELLA, n. *dī-a-nĕl'la* [from *Diana*, the goddess]: genus of *Liliaceæ*, tribe *Asparageæ*. They have drooping blue flowers, and occur in Australia and the south of Asia.

DIANO, *dē-â'nō:* town of s. Italy, province of Salerno, 45 m. s.e. of the town of Salerno. It occupies a beautiful situation on an isolated hill overlooking the river Calore, and in the fertile vale of Diano, which takes its name from the town. There are several churches and an old castle. The commune has a pop. of about 6,000.

DIANOETIC, *dī-ă-nō-ĕt'ĭk*, [Gr. *dia*, through, and, *noos*, mind]: pertaining to the intellectual or reasoning function or processes. Aristotle classified the virtues into the 'Dianoetic' and the 'Moral'. By the former he meant wisdom, insight, and prudence, viz., the virtues which are developed through the fitting education of the intellect: by the latter he understood excellences of human nature such as liberality and temperance which depend for their development upon the proper culture of the life of feeling and impulse.

DIAN'THUS: see PINK.

DIAPASON, n. *dī'ă-pā-sŏn*, in *OE.*, spelt DIAPASE, n. *dī'ă-pās* [Gr. *dĭăpāson*, through all—from *dia*, through; *pāsa*, all, *pasōn*, of all]: term in music by which the ancient Greeks designated the octave. In modern music diapason denotes the range, or compass of the voice, or of an instrument. The French use the term as equivalent to *pitch*, and apply it also to a tuning-fork. Diapason is also the

English name of certain stops of pipes in the organ of eight ft. pitch, which are considered the fundamental stops, of which they are generally two—a stopped diapason and an open diapason on each manual: see ORGAN-BUILDING.

DIAPA′SON REG′ULATOR: machine for registering the vibrations of a tuning-fork, and thus counting minute intervals of time. In M. Duhamel's arrangement a cylinder, by means of a screw-tapped end, was made to advance a little in the direction of the axis; this cylinder was covered with blackened paper, and was rotated by clock-work. A diapason (Fr. for tuning-fork) had a style or marker, made of a small bit of pointed spring, fixed to the end of one of the prongs. On the diapason being sounded in the usual way, and the spring placed lightly against the cylinder, the style traced a sinuous white line on the black paper. The sinuosities became visible representatives of minute intervals of time, the prongs vibrating hundreds of times in a second. M. Breguet then proposed clockwork to prolong the vibrating of the prongs, superseding the pendulum and the spiral spring by a diapason. For fuller details, see description of the apparatus in the *Revue Chronometrique*.

DIAPEDESIS, n. *dī′ă-pĕ-dē′sĭs* [Gr. *diapēdăō*, I ooze through—from *dia*, *pēdăō*, I spring, I leap]: the phenomenon of the passing of blood-corpuscles through the walls of the vessels without their rupture.

DIAPENSIA, n. *dī-a-pĕn′sĭ-a* [L. *diapente;* Gr. *diapente*, a fifth in music; so named by Linnæus, because the flowers are five-cleft]: genus of plants, typical of the sub-order *Diapensieœ*. DIAPENSIA′CEÆ, n. plu. *-ā′sē-ē*, nat. ord. of dicotyledonous plants, native of northern Europe and N. America.

DIAPER, n. *dī′ă-pėr* [F. *diapré*, diapered: OF. *diaspre*, a stuff of jasper-color: It. *diaspro*, a jasper-stone, much used in ornamenting jewelry (*jasper* or *diasper*, see letter diaper), which stone being much used in ornamenting jewelry, originated the Mid. Lat. name *diasprus*, for a texture similarly ornamented or variegated]: in textile manufactures, a fabric with patterns of geometrical regularity, such as are produced by the kaleidoscope, woven in its texture, and produced with shafts and heddles, without the Jacquard machine: a napkin. DIAPER, v. to variegate or figure cloth. DI′APERING, imp. DI′APERED, pp. *-pėrd*, flowered; variegated. DIAPER-WORK, or DIAPERING, in architecture, is a kind of decoration applied to plane surfaces, and consists of a small pattern either of flowers, leaves, or arabesques, carved or painted. The flower, or other object, is generally inclosed in a small frame; and these frames, which touch each other at the edges, constitute in themselves a sort of mathematical diapering. When the pattern is carved, it is generally sunk, and when painted, it consists of a darker shade of the same color as the plane surface, by which the effect of shadow is communicated to it.

DIAPRÉ is applied in Heraldry to fields and charges, relieved by arabesque and geometrical patterns. These patterns were generally of a darker shade of the same tincture. This being merely an ornamental device, not affecting the heraldic value of the objects to which it was applied, was generally left to the fancy of the painter.

DIAPHANOSCOPE, *dī-a-făn′o-skōp:* dark box, constructed for exhibiting transparent photographs or other pictures. It may or may not be furnished with a lens.

DIAPHANOUS, a. *dī-ăf′ă-nŭs* [F. *diaphane*—from Gr. *diăphănēs*, transparent—from Gr. *dia*, through; *phaino*, I show]: allowing light to pass through; translucent; not quite transparent. DIAPHANIE, n. *dī-ăf′ă-nĭ*, a process for decorating glass by placing upon it colored designs on transparent paper. DIAPHANOM′ETER, n. *-nŏm′ĕ-tĕr* [Gr. *metron*, a measure]: instrument for measuring the transparence of the air.

DIAPHONICS, n. plu. *dī′ă-fŏn′ĭks* [Gr. *dia*, *phōnē*, a sound]: the doctrine of refracted sound. DI′APHON′IC, a. *ĭk*, pertaining to.

DIAPHORESIS, n. *dī′ă-fŏ-rē′sĭs* [Gr. *dīăphorēsis*, a carrying through, perspiration—from *dia*, through; *phorĕō*, I carry]: an increase of perspiration. DI′APHORET′IC, a. *-rĕt′ĭk*, that promotes perspiration: N. a medicine which increases perspiration, by exciting the secretions of the skin. The simplest of all diaphoretics are hot drinks of various kinds and baths of warm water, or of vapor, simple or medicated: See BATHS.

The following remedies, used internally, are powerful diaphoretics: antimony, ipecacuanha, opium (these two either singly or in combination in the form of Dover's powder); the carbonate or acetate of ammonia; guiacum, dulcamara, and sassafras; jaborandi or its alkaloid pilocarpine: see these titles.

DIAPHRAGM, n. *dī′ă-frăm* [OF. *diaphragme*, the midriff—from Gr. *diaphrag′ma*, a partition wall—from *dia*, *phrasso*, I hedge or fence in]: the midriff; a muscle or membrane separating the chest or thorax from the abdomen or belly; any substance that intercepts or divides; in *photography* and *optical instruments*, a partition with a hole in it, used for cutting off the superfluous rays of light and thus producing greater sharpness of the image, as well as to correct aberration. DI′APHRAGMAT′IC, a. *-frăg-măt′ĭk*, pertaining to the diaphragm. DI′APHRAG′MATI′TIS, n. *-măti′tĭs*, inflammation of the diaphragm.

DI′APHRAGM, in Anatomy: the transverse muscle which, in man and the mammalia separates the cavity of the thorax or chest from that of the abdomen or belly. In form, it is nearly circular; it is fleshy at its edges, tendinous in its centre. In front, it is attached to the ensiform cartilage of the sternum, or breastbone; laterally, to the inner surfaces of the six lower ribs; and posteriorly, to two tendinous arches on either side, termed the *ligamenta arcuata*, and to the anterior surface of the bodies of

the second, third, and fourth lumbar vertebræ on the right, and only the second and third on the left side; these origins from the vertebræ form two large fleshy bellies (termed the *crura*), which ascend to join the central tendinous portion. The diaphragm presents three principal openings: one quadrilateral, in the tendinous centre, for the upward passage of the inferior vena cava; one of an elliptic shape, formed by the two crura for the esophagus and pneumogastric nerves; and a third for the aorta, the azygos vein, and the thoracic duct.

The diaphragm is in relation superiorly with the pleuræ and pericardium, inferiorly, on the left side with the

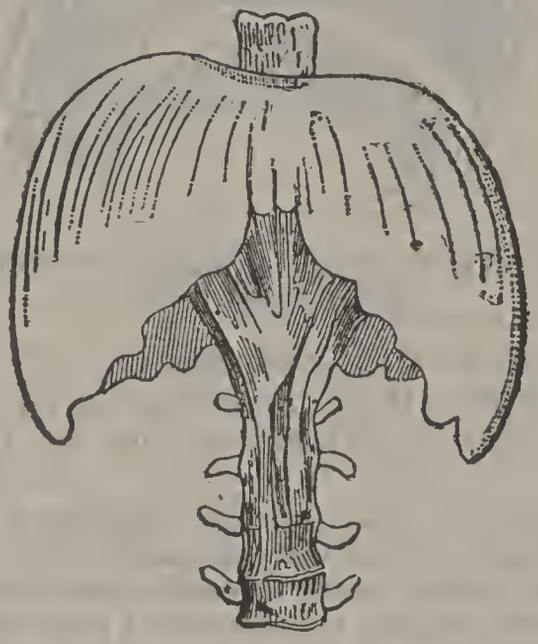


Fig. 1.—The Diaphragm in a state of repose.
Anterior view.

stomach and spleen, on the right with the convex upper surface of the liver; posteriorly, with the kidneys and supra renal capsules and the duodenum; and by its circumference, with the ribs and intercostal muscles, with the sternum, and with the vertebral column.

It is convex superiorly, and concave inferiorly (fig. 1). When it contracts, its upward convexity approximates to a plane surface, and the cavity of the chest being thus enlarged, air rushes in to fill the partial vacuum, and expands the lungs during the act of inspiration (fig. 2). It is thus an inspiratory muscle, and almost the only one to act in tranquil inspiration. The enlargement of the thoracic cavity caused by the contraction of the diaphragm, must obviously be associated with a corresponding diminution of the abdominal space, when the abdominal muscles are tense. Hence this muscle, by its action on the abdominal viscera, aids in the expulsion of the fæces and urine.

Spasmodic action of the diaphragm produces hiccough and sobbing; and in laughing, the alternate contractions and relaxations of this muscle occur with increased rapidity.

Paralysis of the diaphragm causes difficulty in inspiration, and is usually very speedily fatal.

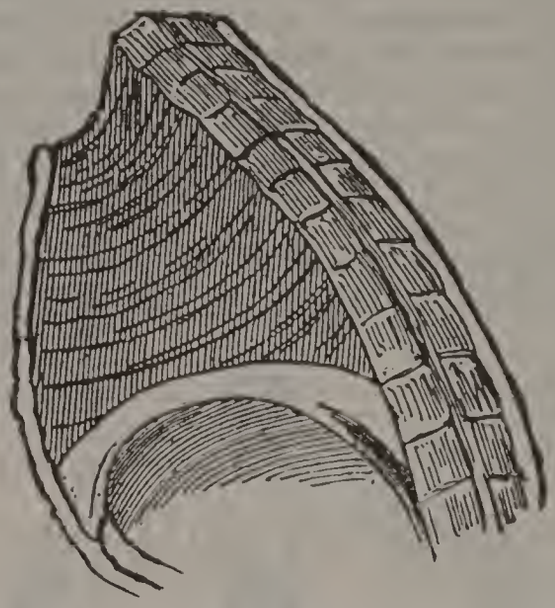


Fig. 2.—The Diaphragm in a state of contraction.
View of lateral section.

DIAPHRAGM SHELL: see SHELL.

DIAPHTHORAIMA, n. *dī-ăf-thŏr-ī′ma* [Gr. *diaphtheirō*, I destroy; *haima*, blood]: generic term for blood poisoning.

DIAPHYSIS, n. *dī-ăf′ĭ-sĭs* [Gr. *dīăphŭsis*, the state of growing between or through—from *dīă*, through; *phŭō*, I produce]: the central point of ossification for the shaft in the long bones; in *bot.*, the abnormal prolongation of the inflorescence.

DIAPORESIS, n. *dī-a-pŏ-rē′sĭs* [Gr. *diaporeō*, I am in doubt]: doubt, or hesitation, as to which of two subjects to begin with.

DIARBEKIR, *dē-âr-bė-kēr′:* town of Asiatic Turkey, cap. of a vilayet of the same name; on the right bank of the Tigris, a short distance from the river, the intervening space being occupied by rich gardens; lat. 37° 55′ n., long. 39° 52′ e. The town, circular in shape, covers a considerable area, and is surrounded by high strong walls, flanked with towers, and pierced by four gates. The streets are dirty, and the houses for the most part are built of rough stone, plastered with a composition of mud and straw, but some of the better class are of black basalt. It has numerous handsome mosques, khans, and bazaars, and five Christian churches. Extensive manufactures of silk, cotton, and other goods, affording, with an active commerce between Aleppo and Bagdad, employment to about 40,000 families, were formerly carried on here; but the manufactures and trade have now greatly declined, and the population of Diarbekir does not amount to more than one-fifth of that number. The silk manufacture, which is now the staple, is said to be improving. Diarbekir oc-

cupies the site of the ancient *Amida*, which was a place of importance in the reign of Constantius, by whom it was strengthened and enlarged. In this reign it was taken by the Persians, from whom it was captured by the Romans; but in 502 the Persians once more became masters, and put 80,000 of the inhabitants to the sword. After many vicissitudes, it passed into the hands of Sultan Selim, 1515. Many Roman and Saracenic remains are still visible. Pop. comprises abt. 8,000 families (or abt. 40,000 persons); 6,300 families being Turkish, and the rest, Greek, Armenian, Rom. Cath. and Jewish.

DIARIAN, DIARIST: see under DIARY.

DIARRHÆMIA, n. *dī′ăr-rē′mĭ′ă* [Gr. *dia*, through; *rheō*, I flow; *haima*, blood]: among cattle, a disease characterized by breaking up of the blood, ecchymosis, and secretions tinged with blood.

DIARRHŒA, n. *dī′ăr-rē′ă* [L.—from Gr. *diarrhoia*, a violent purging—from *dia*, *rhĕō*, I flow]: a looseness of the bowels; an excessive purging or flux. DI′ARRHŒT′IC, a. *-rĕt′ĭk*, pertaining to; purgative: N. that which produces a diarrhœa, or a purging.—Diarrhœa is a disease, or rather a symptom of a number of diseases, characterized by an increase in the discharges from the bowels, which are usually unduly liquid, sometimes overcharged with bile, and sometimes the contrary. Diarrhœa has many varieties and many causes; but all diarrhœal diseases present certain relations in common, which have been studied of late years to a considerable extent from the preventive or sanitary point of view. Thus it is observed of all of these diseases, without exception, that they are more apt to prevail during summer and autumn than during the earlier seasons of the year; and it is well established that their prevalence is to a great extent dependent on the intensity of the solar heat, so that a temperature above 60° F. seems to be almost essential, under ordinary circumstances, to their epidemic diffusion. Moreover, it has been shown that the decomposition of organic matters in the neighborhood of human dwellings, and the introduction of the products of decomposition into the food, drink, or air used by the healthy, is apparently a direct exciting cause of diarrhœa in a great number of instances. Cold and wet seasons are least favorable to the production of diarrhœa, which is explained by the fact that the food is less liable to undergo fermentation and putrefaction changes before it is eaten. Again, where drainage is imperfect, and drinking water impure, diarrhœal diseases are specially apt to occur (see CHOLERA). Infants are especially apt to suffer from diarrhœa, resulting from the indigestion of impure milk or that in which the putrefication bacteria have begun to grow; and a large number of the infantile deaths in many towns are caused by this disease.

Diarrhœa, is either simple, bilious, or choleraic; for the last form, see CHOLERA. The ancients applied the name *lientery* to a diarrhœa in which the dejections consisted of

matters not digested, or but partially so. Dysentery (q.v.) also is a form of diarrhœal disease; as is typhoid fever. Simple and bilious diarrhœa probably often differ only in degree; they are both distinguished from the advanced stages of cholera and dysentery by the presence of abundance of biliary coloring matter in the stools, and by the absence of the distinctive features of the other two diseases as described elsewhere. Diarrhœa frequently depends on organic disease, either of the intestines themselves, or of the liver, kidney, or spleen. It is also one of the most common symptoms of the advanced stage of tuberculosis.

When diarrhœa is plainly the consequence of improper food or drink, when it is very recent, when the strength of the patient is not much impaired, when there is much griping pain or distension of the abdomen, when the evacuations are very unnatural in character, and especially when they are dark colored and very fetid; when the disease has been preceded by habitual constipation and where there is no organic disease to be discovered, it is well to let diarrhœa run its course, at all events for a time, or even to aid it by small doses of very simple laxatives, for the discharge in these cases is to be regarded as a truly curative and beneficent process, calculated to remove from the bowel the irritating substance which, if retained, may produce a more serious trouble. Vegetable astringents, as catechu, kino, tannin, matico, logwood, are much employed both in acute and chronic cases; in other cases the discharge may be checked by the acetate of lead with opium. It should be observed that in some forms of diarrhœa the use of opium is contraindicated and it should in no case be given without medical advice. In many chronic cases the metallic tonics and astringents are of service—e.g., iron, sulphate of copper, zinc, and bismuth. In a very large class of cases, especially of infantile diarrhœa, depending upon a too acid state of the secretions, the leading remedy is chalk, either in powder or in the very serviceable form of the mistura cretæ chalk mixture of the pharmacopœias. Lime-water, mixed with milk in the proportion of one to four or five, is easily given to very young children, and serves nearly the same purpose. See Cholera Infantum.

DIARTHROSIS, n. *dī′ȧr-thrō′sĭs* [Gr. *dia*, through; *arthron*, a joint]: in *anat.*, a joint or connection of two bones admitting of free motion between them, as those of the limbs or lower jaw. Dī′arthro′dial, a. *-dĭ-ăl*, of or pertaining to.

DIARY, n. *dī′ă-rĭ* [L. *dīārĭŭm*, a daily allowance—from *dĭēs*, a day: It. *diario*]: a register of daily events or transactions usually such as have reference to the writer personally; a journal Diarian, a. *dī-ā′rĭ-ăn*, pertaining to a diary; daily. Diarist, n. *dī′ă-rĭst*, one who keeps a diary. A Diary contains a narrative, more or less detailed, of matters of personal interest, often including the results of reading or meditation. Yet references to current events

of general interest are sometimes introduced. This form of diary is also known as a journal. To the mercantile man a diary serves the purpose of an order or memorandum book; while the physician finds it indispensable as a register of engagements.

Books for making such records are issued every year, containing blank pages, reference tables, etc.

Diaries have often furnished the historian with invaluable material, supplying the absence of public records, and furnishing minute and intimate details of manners and of motives that do far more to help us to understand the past than more formal records. Such documents as Robert Baillie's *Journals*, the *Diaries* of Pepys and Evelyn, and the *Journals* of Greville are among the most valuable sources of real history.

DIAS, *dē'âs*, Antonio Goncalvez: Brazilian poet: b. Caxias 1823, Aug. 10; d. 1864, Nov. 3. He was educated in Portugal, and returning to his native country, published at Rio de Janeiro in 1846 a volume of poems entitled *Primeiros cantos*, which was followed by his drama of *Leonor de Mendonca* (1847); *Segundos cantos* (1848); and *Ultimos cantos* (1850). In 1848 he was chosen professor of national history in the college of Dom Pedro II.; he was subsequently employed in the office of the minister of foreign affairs, and in 1855 was charged with a scientific mission to Europe. His poetry has been exceedingly popular in Brazil.

DIAS, Henrique, Brazilian general: b. Pernambuco about 1600; d. latter part of the 17th c. He was a freed negro, who by his superior attainments rose in 1639 to the supreme command of the colored soldiery of the Brazilian army. He took a conspicuous part in the protracted warfare which finally led to the overthrow of Dutch influence.

DIASCHISMA, *dī-a-skĭz'mâ:* Greek name of a small musical interval which appears only in the mathematical calculation of greater intervals. The diaschisma is (1) the difference between the great half tone and the small *limma*, or the remainder when the latter is subtracted from the former, 2,048: 2,025; (2) the difference between the *diesis* and the *syntonic comma*, also 2,048 : 2,025. The diaschisma and the small *limma* added together always make the greater half tone, or 16:15; and the *syntonic comma* added to the diaschisma always make the *diesis*, 128 : 125.

DIASPORE, n. *dī'ă-spōr* [Gr. *diaspei'rō*, I disperse]: a mineral chiefly consisting of hydrate of alumina, of a greenish gray color—so named from its decrepitating and dispersing when placed in a flame.

DIASTASE, n. *dī-ă-stās*, a ferment existing in barley, oats and other plants, and also in animals. When in solution it possesses the property of causing fecula or starch to break up at the temperature of 156° F., transforming it first into dextrine and then into sugar: 1 part of diastase is sufficient to change 2,000 parts of starch. It is obtained by digesting in a mixture of three parts of water

and one of alcohol, at a temperature of 113° F., a certain quantity of germinated barley ground and dried in the open air, and then putting the whole under pressure and filtering it. It is solid, white, and soluble in water and diluted alcohol, but insoluble in strong alcohol. The composition of diastase has not been exactly determined. It is, however, an albuminoid substance.

DIASTEMA, n. *dī′ă-stē′mă* [Gr. *diastēma*, an interval]: a gap or interval, especially between teeth. Dī′ASTEM, n. *-as-tēm*, in *anc. music*, a simple interval.

DIASTOLE, n. *dī-ăs′tŏ-lē* [Gr. *diastŏlē*, dilatation, extension—from *dia*, *stello*, I set or place]: the dilatation or opening of the heart after its contraction or *systole;* in *gram.*, the lengthening of a syllable naturally short; a point used to separate the syllables of one or two words. Dī′ASTOL′IC, a. *-tŏl′ĭk*, pertaining to.

DIASTYLE, n. *dī′a-stīl* [Gr. *diastulion*, the space between columns—from *dia*, between; *stulos*, a pillar]: arrangement of columns in Grecian and Roman architecture, in which the intercolumniation or space between them is equal to three or four diameters of the shaft.

DIATHERMAL, a. *dī′ă-thėr′măl* [Gr. *dia*, through *thermē*, heat]: allowing rays of heat to pass through Dī′ATHER′MANCY, n. *-măn-sĭ*, the property which certain substances possess of allowing rays of heat to pass through them, as rays of light pass through glass: see HEAT.

DIATHESIS, n. *dī-ăth′ĕ-sĭs* [Gr. *diathĕsis*, a disposing or putting in order—from *dia*, *tithēmī*, I put or place]: in the usage of old medical authors, the predisposition or constitution of the body which renders it prone to certain diseased states. Thus the tubercular, scrofulous, gouty, rheumatic, cancerous, or calculous diatheses, are described as something different from the corresponding diseases, but leading to these as natural or probable consequences, under certain conditions or exciting causes. The study of diathesis apart from existing disease, is almost always unsatisfactory, and leads to over-refinement and the pursuit of intangible abstractions, without due regard to evidence; inasmuch as the existence of a state which *is not* disease, but *leads to* disease, can rarely be established upon an unassailable basis.

DIATHYRA, n. *dī-a-thī′ra* [Gr. *diathura*—from *dia*, through; *thura*, a door]: the vestibule before the room of a Greek house, corresponding to the prothyra of the Romans.

DIATOMACEÆ, n. plu. *dī′ă-tŏ-mā′sē-ē*, or DIATOMS, n. plu. *dī′ă-tŏmz* [Gr. *diatomē*, dissection, division—from *dia*, through, asunder; *tomē*, a cutting—the filaments being divided into joints]: sub-order or tribe of algæ, provided with silicious envelopes containing protoplasm. Dī′ATOM′IC, a. *-tŏm′ĭk*, in *chem.*, applied to radicals able to unite with two monad atoms. DIATOMINE, n. *dī-ăt′ŏ-mĭn*, a buff-colored substance found in diatoms, which conceals the green color of the chlorophyll.

DIATOMACEÆ.

DIATOMACEÆ, *dī-a-to-mā'sē-ē*, or DIATOMS, *dī'a-tōmz:* group of organized beings, now generally regarded as of the vegetable kingdom, and ranked as family of Zygospores; but formerly reckoned among animalcules, which view is no longer held. Lindley makes Diatomaceæ an order of his *Algal Alliance* of thallogenous plants, including *Desmidieæ* (q.v.) as a sub-order, and distinguishing the true Diatomaceæ as another sub-order, under the name *Cymbelleæ*. The Diatomaceæ are generally of brown color, though they frequently become greenish when dry. They are remarkable for their silicious covering, composed of two pieces or valves, and their angular shape, and are among the most beautiful and interesting of microscopic objects, exhibiting great variety of markings—striæ, dots, etc., regularly and symmetrically arranged. The valves, or pieces of the silicious covering, are always equal in length, but their sides often differ much in breadth. All within appears to be only a single cell; but many of these cells are often united or in contact, according to some mode of arrangement characteristic of the particular species. Diatomaceæ are found both in salt and in fresh water, also on the surface of damp rocks and walls. They all are microscopic, but are so numerous that the free forms often collect as a thin brown layer on the mud at the bottom of pools, the pale brown in these organisms masking the chlorophyl. As seen under the microscope, many of these are boat-like in shape, and have locomotion. The connected forms are arranged in fans with a stem, or in ribbons; some hang together curiously by alternate angles, in a zigzag chain. The striæ (in one species one eight-millionth of an inch) are used to test lenses; these striæ give to some the appearance of a double hair-comb. Diatomaceæ increase in several modes; one is by division parallel to the faces of the valves, making two halves, not transversely but longitudinally; and the lines which mark the progress are almost always visible in them. In this process, new silicious valves are formed along the line of division, the old valves remaining on the outer sides, and each new diatom cell having an old valve and a new one. True reproduction takes place by Conjugation (q.v.); the commingled protoplasm, emerging, grows to a larger pair. Diatomaceæ rapidly putrefy, but their silicious shields resist decomposition more perfectly than almost any product of organic nature, and are found in immense numbers in many marls, clays, and rocks. They are capable of resisting even the action of fire, and of the gastric-juice of the stomachs of animals, and are found in pumice and volcanic ashes, and in guano. The abundance of the Diatomaceæ as existing organisms, corresponds with what may be inferred from their remains in the oolite, chalk, etc., as to former geological periods. Britain is known to possess hundreds of existing species. Dr. Hooker found them in such numbers in the Antarctic Ocean as to give an ochreous brown color to its surface as far as the eye could reach, and to the icebergs floating in it; while a submarine

deposit is in process of formation, composed of their silicious shields. Thus these minute organisms, unimportant as they may be deemed individually, fill no insignificant place, collectively, in the general scheme of creation.

Fossil Diatomaceaæ have been observed in strata of every age. Though so minute in the individual, they form, in the aggregate, considerable thicknesses of rock—they have, in fact, in common with the associated and nearly as minute and simple organisms of the animal kingdom, the Foraminifera, produced greater changes, and left more lasting records than any effected by higher members of either kingdom. In the older rocks, Diatomaceæ have not been noticed in any quantity, their existence, however, in the clay slates of the Lower Silurians was discovered by Mr. A. Bryson, and has since been noticed by other observers. In Tertiary strata they occur in abundance. There is good reason for believing that the silicious substance of flint was obtained largely from these organisms; many of their frustules may yet be discerned in it. Tripoli-stone consists entirely of their silicious plates, hence its value as a polishing agent. Several extensive deposits of tripoli are found in Bohemia—one at Egea is two m. in length, and averages 28 ft. in thickness; another at Bilin, forming the upper layer of a hill, is 14 ft. thick; it is composed chiefly of a species of *Gallionella,* with specimens of *Naviculæ,* etc.; as many as forty-one thousand millions exist in every cubic inch of the stone! The city of Richmond, Va., is built on a stratum of diatomaceous earth, 18 ft. thick. Similar deposits are found in different localities in Britain, as at Premnay, Dolgelly, Lough Mourne, Raasay, and Mull. From the last locality, Gregory has given a catalogue of 150 species. The whitish powder of which the deposit consists is called in Sweden Bergmehl (q.v.), and is, in seasons of scarcity, mixed by the poor with their food, though probably without any advantage, save increasing its bulk. Diatomaceæ occur in more or less abundance in marl, peat, guano, estuary mud, and other recent deposits.

DIATONI, n. plu. *dī-ăt′o-nī* [Gr. *diatonos*]: angle-stones in a wall, wrought on two faces, and projecting between the general surface of the wall; the girders or band-stones; corner-stones.

DIATONIC, a. *dī′ă-tŏn′īk* [Gr. *diătŏnos,* extended through—from *dia, tŏnos,* a stretching of the voice, a sound —meaning 'by tones' or 'from tone to tone']: in *music,* in the ordinary scale; by tones and semitones, as distinguished from the *chromatic scale,* which proceeds by semitones only. The diatonic species of the ancient Greeks—apart from their chromatic and enharmonic species—formed the foundation of their whole system of music, and was arranged in tetrachords composed of one semitone and two whole tones. The diatonic scale of modern music is a combination of the Greek tetrachord, forming a succession of sounds progressing from degree to degree, by tones and semitones in a certain fixed order, neither omitting nor repeating; the position of the semitones varying, as the

scale is major or minor.—DIATONIC SCALE IN COLORS, the spaces occupied by the seven primary colors of a solar spectrum, supposed by some to correspond in length with the strings that sound in the musical diatonic scale—a supposition without good foundation.

DIATRIBE, n. *dī′ă-trīb* [L. *diatrĭbă*, a place for learned disputations, a school—from Gr. *diătrĭbē*, a wearing away, a wasting of time—from *dia*, *trībo*, I rub or grind small: F. *diatribe*]: originally, a critical examination of a literary work; now, bitter or violent criticism; continued disputation; in *discourse*, an undue enlarging on some one point: a strain of abusive or railing language. DIAT′RIBIST, n. *-ăt′rĭ-bĭst*, one who.

DIAZ, *dī′ăz*, ABBY MORTON: American writer: b. Plymouth, Mass., 1821; d. Belmont, Mass., 1904, April 1. She was a member of the famous Brook Farm Association, and has been an earnest worker in social reforms. She founded the Woman's Educational and Industrial Union of Boston, and was its president for many years. Her books for children include: *The Cat's Arabian Nights* (1881); *The John Spicer Lectures* (1887); *Polly Cologne; Jimmy-johns;* and *The William Henry Letters* (1870). Other works are: *Bybury to Beacon Street, a Discussion of Social Topics; Domestic Problems; Only a Flock of Women* (1893).

DIAZ, *dē-âth*, MIGUEL, Spanish explorer: b. Aragon second half of the 15th c.; d. 1514. He took part in the second voyage of Columbus, and was one of the colonists of the island of St. Domingo. He quitted the colony in 1495, in consequence of a duel, and took refuge with a few of his companions in the southern part of the island, where he married a native. Through the advice of his wife he discovered the gold mines in this part of the island, the existence of which he communicated to Bartolomé Columbus, whereby he reconciled himself with the colonists, and led the way to the foundation of the town of Nueva Isabella, afterward called St. Domingo. He was made governor of Porto Rico in 1509, but his fidelity to the family of Columbus repeatedly brought him into trouble.

DIAZ, *dē′âs*, BARTOLOMMEO: a Portuguese navigator of noble birth; of the latter half of the 15th c.; d. 1500, May 29. His residence at the court of King John II. brought him into contact with many scientific men, among others the German cosmographer Behaim (q.v.). Diaz took a great interest in geographical discovery, and his knowledge and abilities were so highly estimated, that the king gave him the command of two vessels to follow up the discoveries already made by Portuguese adventurers on the w. coast of Africa. Diaz soon reached the limit which had been attained in s. Atlantic navigation, and first approached land in 26° s. lat. After disembarking at various places, and taking possession of the shores in the name of the Portuguese king, he sailed round the extremity of Africa without suspecting it, and cast anchor at the mouth of the Great

Fish river, a little e. of Algoa Bay. A storm now rose, and drove him into Algoa Bay. He there found, near Port Elizabeth, his companion-vessel, from which he had been separated before rounding the Cape; but unfortunately the greater part of its crew had been murdered by the blacks. He now, for the first time, noticed his discovery, and called the cape, in remembrance of his danger, *Cabo de todos los tormentos* (Cape of all the Storms)—a name which the king of Portugal afterward changed into its present, *Cabo de Buena Esperanza* (Cape of Good Hope). Diaz arrived in Lisbon 1487, Dec., and was at first greeted with enthusiasm, but soon saw Vasco da Gama preferred before him, and was compelled to act under the latter in the grand expedition of 1497. Vasco da Gama even sent him back to Portugal after they had reached the Cape Verd Isles, so that he had no share in the honor of discovering a maritime route to the Indies. Three years later, he joined the expedition of Cabral, discoverer of Brazil, but was lost in a storm.

DIAZ, *dē'âth*, Porfirio: b. Oaxaca, Mexico, 1830, Sep, 15: soldier and statesman. He received a classical education at the Oaxaca Institute, and had begun studying law when the war with the United States broke out. He served through that struggle in the national guards, and on the conclusion of peace made a study of military science. On Santa Anna's accession to the dictatorship, he left the army and practiced law, but returned and took a conspicuous part in the revolution of 1854. He served with the liberal party against the reactionists 1858; became a deputy in congress 1861; took the field to oppose the French troops and won a victory over them at Puebla 1862, May 5; took part in the defense of that city when besieged by the French 1863, Mar.–May, was taken prisoner on the surrender, but made his escape; harassed Maximilian's troops till forced to surrender a second time, at Oaxaca, 1865; Feb.; made his escape and with 900 men took 500 Austrian prisoners with their artillery and 700 stand of arms at the battle of Carbonera 1866, Oct. 15; besieged and captured Puebla 1867, April 2; and immediately marched on Mexico City, which surrendered to him June 21. On the re-establishment of the republic he was an unsuccessful candidate for pres. 1867. In 1872 and '76 he led revolutions against the govt., and after three severe battles occupied the capital in the latter year. In 1877 he was elected pres. to fill the unexpired term of the fugitive pres. Lerdo, ending 1880, Nov. 30. According to the 'plan of Tuxtepec,' which he had proclaimed 1875–76, he was ineligible to succeed himself. His sec., Gen. Gonzales, was elected pres., and Gen. Diaz was appointed chief justice of the supreme court and elected gov. of Oaxaca. In 1884, he was re-elected pres.; in 1886, his partisans secured the abolition of the law prohibiting a second consecutive pres. term; and in 1888, and again in 1892, he was re-elected, the constitution having been changed to permit this. In 1900, he was made pres. for the sixth time. He has successfully exerted his in-

GENERAL PORFIRIO DIAZ.
President of Mexico.

fluence to secure for Mexico a commercial and manufacturing standing worthy of her vast resources.

DIAZ DEL CASTILLO, Bernardo (vulgarly Bernal): one of the Spanish conquerors of Mexico, and historian of that conquest: b. Medina del Campo, in Old Castile, about 1498; d. Santiago de los Caballeros, Guatemala, leaving numerous descendants. His work, entitled 'Historia Verdadera de la Conquista de la Nueva España,' is of uncommon value and interest. Date of his death not known. Probably his family belonged to the minor nobility, but he did not have the influence necessary to secure his appointment as an officer. He speaks of himself as having been in this country (Central America and Mexico) twice before the coming of Cortés, and the third time with him. On the first occasion he accompanied Pedrarias Davila (q.v.); on the second, he took part in the expeditions to Yucatan and along the coast of Mexico under Córdoba and Grijalva (1517-18). Between 1515 and 1517 he visited Cuba; from Santiago de Cuba, in 1518 Nov. 18, he sailed with the Spanish fleet under Cortés; during the next few years he fought, it is said, in more than 100 of the battles with the Indians preceding or following the capture of the City of Mexico; and in 1523-4 he served under Pedro de Alvarado, conqueror of Guatemala and Salvador. Alvarado established the seat of government in the native (Guatemalan) town of Almolonga, afterward called Santiago de los Caballeros; and Bernal Diaz was made governor of this town, as a reward for his service in the field. His history was finished 1568, Feb. 26. The particular merit of the history is that it gives to each of the officers and soldiers the credit which was his due, instead of ascribing the overthrow of the Aztec empire and the establishment of New Spain solely to the genius of Cortés.

DIBASIC, a. *dī-bā'zĭk* [L. and Gr. *dis*, twice, in two parts; and *basic*, from *base*]: in *chem.*, requiring two molecules of a base to one of the acid to form a saturated salt, thus sulphuric acid is *dibasic*.

DIBATIS, n. *dē-bă'tĭs*. See Dimeris.

DIBBLE, n. *dĭb'l*, or Dibber, n. *dĭb'bėr* [the syllables *dib*, *dimp*, and *dip*, express the act of striking with a pointed instrument: Scot. *dab;* Norm. F. *diguer*, to prick]: implement for making holes in the ground in which to place seeds or plants. Its simplest form is a small round stick, a foot or more in length, one end of which is sharpened. A more elaborate dibble consists of a handle and a head having several points covered with iron. With the latter form the operator walks backward, making holes with the dibble into which the seeds are dropped. It is a slow and laborious method, not adapted to heavy soils. Several machines for dibbling were invented, but none of them came into general use. For seeding purposes the dibble has largely been supplanted by the drill and hand seed-sowers: see Drill. In the United States the short

dibble is largely used by farmers and market gardeners in transplanting. The sharp end of the implement is forced into the ground with the right hand. The plant is taken in the left hand and inserted in the hole thus made, and the operation is completed by a thrust into the earth at the side of the plant by which the soil is compacted around the roots. DIBBLE, v. to plant with a dibble; to make holes; to dip. DIB'BLING, imp. *-lĭng*. DIBBLED, pp. *dĭb'ld* DIB'BLER, n. one who.

DIBDIN, *dĭb'dĭn*, CHARLES: 1745-1814; b. Southampton, England: musician and poet. He was educated at Winchester, and at the age of 16 made his literary *début* in London, by writing an opera called *The Sheperd's Artifice*, produced at Covent Garden Theatre, where he afterward became musical manager. In 1879, he began a series of musical entertainments in the city, entitled *The Whim of the Moment*, which gained great celebrity. After several vicissitudes, he withdrew, in straightened circumstances, from public life in 1805, when government granted him, in consideration of his literary merits, a pension of £200. Dibdin is an admirable writer of sea-songs, of which he composed about 1,200. Neptune, and not Apollo, seems to have inspired him. In fact, he is the only song-writer who has reached the heart of 'the mariners of England.' His verses smack of the briny deep, and reflect with astonishing felicity the easy, childlike virtues and the fearless courage of the English tar. It is known that they had a great effect during the war between France and England in supplying the navy with volunteers, and they have even been quoted in mutinies as aids to the restoration of order and discipline. Among Dibdin's happiest pieces are *Poor Jack* and *Poor Tom Bowling*. A comparatively late edition of Dibdin's songs with a memoir by Thomas Dibdin, illustrated by G. Cruikshank, appeared 1850 (3d ed. 1863). Dibdin wrote also a great number of dramatic pieces, etc. He left two sons, Charles Dibdin (died 1833), and Thomas Dibdin (died 1841), both of whom composed songs and dramas.

DIBDIN, THOMAS FROGNALL: 1776-1847, Nov. 18, b. Calcutta; nephew of Charles Dibdin; famous writer of sea-songs. He lost both parents when hardly four years of age, and was brought up by his mother's brother, a Mr. Crompton. He studied at St. John's College, Oxford, but left without taking a degree. After a short and unsuccessful career as a lawyer, he became a clergyman of the Church of England 1804. From that period until his death he labored as a bibliographist with a diligence that would have been commendable if accompanied with better judgment and greater accuracy. Dibdin's principal works are an *Introduction to the Greek and Roman Classics* (1802), *Typographical Antiquities*, 4 vols. (1810-19), *Bibliomania* (1811), *The Bibliographical Decameron* (1817), *Bibliotheca Spencerianæ* (1814), *Bibliographical, Antiquarian, and Picturesque Tour in France and Germany* (1821), *The Library Companion* (1824), and *Reminiscences of a Literary Life* (1836). All

his books contain valuable and rare information, but are far from trustworthy in matters of detail. Many of them are exquisite in typography and artistic decoration.

DIBOTHRIAN, n. *dī-bŏth′rĭ-an* [*di*, twice; *bothrion*, a little pit]: one of the divisions of entozoa, including those tapeworms of the family *Bothriocephala* which have not more than two pits or fossæ on the head.

DIBRANCHIATE, a. *dī-brăng′kĭ-āt* [Gr. *dis*, twice *brang′chĭă*, gills]: applied to an order of cephalopod (q.v.) including the cuttle-fish, in which two gills are present. Dĭ′BRANCHIA′TA, n. plu. *-kĭ-ā′tă*, the order.

DIBS, or DIBBS, n. *dĭbz* [OE. *dibs*, the small bones in the knees of sheep]: in *OE.*, a game played with the small joint bones of the legs of sheep, tossed up, and then caught first on the palm, then on the back of the hand; its antiquity is proved by figures on Grecian vases, on which women are seen kneeling and engaged in the sport: in Scotland, where the game is usually played with small pebbles or shells, it is called 'the chucks.' Dibs in *familiar university slang*, money—said to be a corruption of *diobs*—from *dīōbŏlŏn*, a classic coin. TIP = money, may also be a corruption of DIBS. DIBS, or DIPS, in *Syria*, a sweet preparation made from the juice of the grape.

DICAST, *dī′kast:* member of the *dicasterion* of Athens, a kind of national jury, consisting of 6,000 citizens elected annually from the whole body of freemen, and divided into 10 sections, for the purpose of assisting in the administration of justice. In important causes the evidence, points of law, and antagonistic issues were developed before a magistrate, reduced to a concise statement of law and fact, and in this form laid before one of the sections for decision. The dicasts resembled modern jurors in that they were not supposed to have a previous knowledge of a case coming before them, and were sworn to render decisions according to the law and evidence.

DICE, n. plu. *dīs*, DIE, n. sing. *dī* [see DIE 2]: small cubes used in play. DICE-BOX, the box from which dice are thrown in gaming. DICING, n. *dī′sĭng*, playing at dice.

DICENTRA, *dī-sĕn′tra:* genus of beautiful herbaceous perennials of the order *Fumariaceæ*, common to a light, rich, and deep soil. Several wild specimens are found in moist woodlands of the United States, and are distinguished by their showy flowers, which bloom early in the spring. The *D. cucullaria* have cream-colored blossoms, tipped with white, and as they hang in clusters from the stalk, they resemble a pair of breeches suspended by the feet, and hence are sometimes called 'Dutchmen's breeches.' The *D. Canadensis* have greenish-white flowers, tipped with red, are very fragrant, and known as 'squirrel corn.' The *D. eximia* have reddish-purple flowers, larger than the others, and the *D. chrysantha*, of Cal., large golden-yellow ones. The most beautiful of all species is the *D. spectabilis*, which was introduced into the United States from Japan 1846. It has strong stalks, and pro-

duces rosy flowers an inch long, which from their peculiar shape and shade of color have received the name of 'bleeding heart.'

DICEPHALOUS, a. *dī-sĕf′ă-lŭs* [Gr. *dis*, twice; *kephălē*, the head]: having two heads on one body.

DICERAS, n. *dī′sėr-ăs* [Gr. *di*, twice, twofold; *keras*, a horn]: genus of massive bivalves of the Middle Oolites, belonging to the family *Chamidæ* or clam-shells. The shell is sub-equivalve, attached by either ambo.

DICH, v. *dĭsh:* a word in Shakespeare, in 'Timon of Athens,' not understood, but commonly said to be a corruption of 'do it': may it not be simply the *OE.* and *Scot.* word *dish* or *dusch*, 'to rush into forcibly,' 'to twang'? in which case, the line is thoroughly expressive of the pleasurable excitement that follows good eating and drinking.

DICHASIUM, n. *dī-kā′zĭ-ŭm* [Gr. *dichāzō*, I divide into two]: in *bot.*, a form of definite inflorescence in which each primary axis produces a pair of opposite lateral axis, each of which produces a similar pair; a dichotomous cyme.

DICHASTASIS, n. *dī-kăs′tă-sĭs* [Gr. *dichazō*, I part asunder—from *dicha*, in two parts, apart]: spontaneous subdivision. DICHAS′TIC, a. *-tĭk*, capable of spontaneous subdivision.

DICHELESTIDÆ, n. plu. *dī-kĕ-lĕs′tĭ-dē* [Gr. *dichē*, in two ways: *lēstēs*, a robber (?)]: family of entomostracans, order *Parasita*. The anterior segment has four antennæ, one pair of which is filiform, the others stout and furnished with a prehensile claw. DICHELES′TIUM, *-ŭm*, typical genus of the family *Dichelestidæ*. The species are parasitic upon fishes, etc.

DICHLAMYDEOUS, a. *dĭk′lă-mĭd′ĭ-ŭs* [Gr. *dis*, twice; *chlamus*, a garment]: having two coverings; in *bot.*, applied to those flowers which have both a calyx and a corolla. Flowers in which the calyx and corolla are very similar, and unite to form a *perianth*, are dichlamydeous, as well as those in which they are very different. Decandolle divides dicotyledonous or exogenous plants into *Dichlamydeous* and *Monochlamydeous;* the former including the three sub-classes of *Thalamifloræ*, *Calycifloræ*, and *Corollifloræ*, while the latter form a single sub-class.

DICHOBUNE, n. *dī-ko-būn′* [Gr. *dicha*, in two parts, apart; *bounos*, a ridge: so called from the ridges in the upper molars]: genus of the family *Anoplotheridæ*, and found in the middle Eocene formations. They constitute a kind of transition between the Swine and the true Ruminants.

DICHOGAMOUS, a. *dī-kŏg′ă-mŭs* [Gr. *dicha*, in two parts; *gamĕō*, I marry]: applied to plants in which the stamens and stigmas of the same flower do not reach maturity at the same time. DICHOG′AMY, n. *-ă-mĭ*, the ripening of the stamens and pistil of a flower at different times.

DICHONDRA, n. *dī-kŏn′dra* [Gr. *di*, *dis*, twice, twofold; *chondros*, corn—in allusion to the capsules]: genus of *Convolvulaceæ*, tribe *Dichondreæ*, of which it is the type. DI-

CHON′DREÆ, n. plu. *-drē-ē*, tribe of *Convolvulaceæ*, characterized by having the carpels distinct instead of consolidated.

DICHOTOMOUS, a. *dī-kŏt′ŏ-mŭs* [Gr. *dichotŏmos*, divided into halves—from *dicha*, in two parts; *tomē*, a cutting], having the divisions always in pairs; in *botany*, denoting branching by repeated forkings, as in the veins of the fronds of ferns and of the leaves of some coniferous trees, the stems of some ferns, the fronds of some algæ, etc.: the stem of the mistletoe is usually thus divided, and this division is a remarkable characteristic of the doom-palm stem. DICHOT′OMIST, n. one who dichotomizes. DICHOT′OMIZE, v. *-mīz*, to cut or divide into two parts, or into pairs. DICHOT′OMI′ZING, imp. DICHOT′OMIZED, pp. *-mīzd*. DICHOT′OMY, n. *-mĭ*, division or distribution by pairs: in anthropology, theory of man as existing in a twofold nature, body and soul—opposed to trichotomy (threefold—body, soul, and spirit): see SOUL.

DICHOTOMY, in logic: the division or sub-division of differing objects into precisely two classes according to the presence or absence of some given mark. For example we might divide objects into 'green' and 'not green'; still further into 'yellow and 'not-yellow.' The method is not only cumbersome but possesses the further drawback that the classification obtained is more apparent than real in as much as to say merely that something is not something else is not to tell what it is. To divide colors into 'green' and 'not-green' gives us no information about what not-green colors are.

DICHROISM, n. *dĭk′rō-ĭzm* [Gr. *dis*, twice; *chrŏă*, color]: in *crystallography*, the property which many doubly-refracting crystals possess of exhibiting two or more colors, when viewed in different directions. It, or the allied term *Dichromatism*, has been applied also to those fluids which appear of different colors when viewed by reflected and refracted light; when seen in thick or thin layers, etc.: e.g., venous blood, or any blood impregnated with carbonic acid, hydrogen, or nitrogen, appears, when in moderately thin layers, of a purple color; in extremely thin layers, green. DICH′ROITE, n. *-īt*, another name for the crystal *iolite*, a silicate of magnesia, iron and alumina; so called from its exhibition of different colors when viewed in different directions DICH′ROMAT′IC, a. *-măt′ĭk*, exhibiting two or more colors. DICHRO′MATISM, allied term to Dichroism. See CHROMIUM.

DICHROSCOPE, n. *dī′kro skōp* [Gr. *dichroia*, double color; *skopeō*, I see]: instrument to exhibit the two complementary colors of polarized light.

DICK, *dĭk*, THOMAS, LL.D.: 1774-1857, July 29; b. near Dundee, Scotland: religious philosopher. He was educated at the Univ. of Edinburgh, and intended for the ministry of the Secession Presb. Church. After a brief pastoral charge, he applied himself to teaching, lecturing, occasional preaching, and authorship. Dick as an author

was very popular; but though his works had wide circulation in England and the United States, they brought him very little pecuniary return. Toward the close of his life, a small pension was granted him. He died at Broughtoy Ferry, near Dundee. Dick's principal works are—*The Christian Philosopher* (1823), *The Philosophy of Religion* (1825), *The Philosophy of a Future State* (1828), *Celestial Scenery* (1838), *The Sidereal Heavens* (1840), and *The Practical Astronomer* (1845). Several of Dick's writings have been translated into other languages; one, even into Chinese. Their scientific views are now outgrown.

DICK BEQUEST': fund bequeathed by James Dick of Finsbury Square, London, for the benefit of the parochial schoolmasters of Moray, Banff, and Aberdeen. James Dick (1743, Nov.—1828, May 24; b. Forres, Morayshire) entered mercantile life in the W. Indies at the age of 19, amassing wealth, which he subsequently increased in London; leaving most of it for the purpose above mentioned. The amount (1833) was £113,147, 4s. 7d., since increased to £122,000; yielding (after deducting all expenses) for annual distribution a sum which averages £4,000. Mr. Dick's object was 'to encourage active schoolmasters, and gradually to elevate the literary character of the parochial schoolmasters and schools. The operation of this bequest has been most advantageous. There is probably no district in Scotland in which the parochial schools are so uniformly taught by highly qualified men, and with results so beneficial.

DICKENS, n. *dĭk'nz:* an old vulgar slang exclamation, usually understood to be synonymous with 'devil'; as, 'What the *dickens* are you about?' may the word not rather be the *OE.* and *Scot.* word *dichens*, 'a beating, severe retribution'? thus connecting the exclamation with the retribution expected to follow carelessness or wrong-doing.

DICKENS, Charles, *dĭk'ĕns:* English novelist and humorist: 1812, Feb. 7—1870, June 9; b. Landport, a suburb of Portsea, in Hampshire, England: eldest son and second child of John and Elizabeth Dickens. His father was employed as a clerk in the navy pay office at the Portsmouth Dockyard. In 1814 the family moved to London and two years later to Chatham, near Rochester, in Kent, where they remained until 1821. This neighborhood made a very strong impression upon the boy and it is constantly recalled in his sketches and novels, most vividly in connection with the childhood of David Copperfield, who is in so many ways the real Charles Dickens. During the Chatham period Dickens, with his favorite sister Fanny attended a day-school conducted by an excellent teacher Mr. William Giles, for whom the novelist retained a high regard. In 1821 John Dickens, whose salary had been reduced, returned to London, where for several years the family experiences were very similar to those of the Micawbers in *David Copperfield.* Mrs. Dickens attempted to start a young ladies' academy,

CHARLES DICKENS.

but never got beyond the stage of placing a large brass sign on the front door. She later rendered a real service to literature by unconsciously posing as the model of the illogical but fascinating Mrs. Nickleby. Finally the elder Dickens was consigned to the Marshalsea prison for debtors, described in *Little Dorrit*, where his wife and all the children except Charles lived with him. Through the influence of a relative Charles was given employment in a shoe-blacking warehouse at Hungerford Stairs, where he remained until after his father's discharge from prison. The unhappiness of David Copperfield in his similar position was merely an echo of Dickens' own feelings. In later life Dickens only once referred to the episode, when he related the circumstances to his friend and biographer Forster. So keen was his sense of the degradation of those surroundings that he carefully avoided ever approaching the locality. On leaving this uncongenial employment Dickens was placed in a school, the proprietor of which furnished many hints for the development of Mr. Creakle in *David Copperfield*. The most interesting feature of his life at Wellington House Academy was a club, established for the purpose of circulating tales written by the budding story-teller. The passion for theatricals, a striking feature of his later life, also appears at this time. After leaving the Academy he attended another school for a short period. In 1827 Dickens entered a solicitor's office on a small salary, acquiring much of the legal knowledge which he put to such admirable use in his works. Urged by the example of his father, who had become a parliamentary reporter on the *Morning Herald*, Dickens, like the hero of his autobiographical novel, studied short hand and in 1828 became a reporter in Doctors' Commons, that legal anachronism so vividly described in *David Copperfield*. Like his hero, too, he fell in love, but this first romantic experience was more like Romeo's than David's. After an unsuccessful attempt to go on the stage, Dickens in 1831 became a parliamentary reporter for the *True Sun*, and three years later attached himself to one of the leading Whig journals of that time, the *Morning Chronicle*. In a letter he described himself as having been 'the best and most rapid reporter ever known.' A year before this Dickens' first literary contribution, now known as *Mr. Mims and His Cousin*, was published in the *Monthly Magazine* and in the following year appeared the first article over the famous signature 'Boz,' a pen name suggested by his own early pronunciation of Moses. The later sketches by Boz were published in the *Evening Chronicle*, and early in 1836 they had reached such proportions that they were collected and issued in two volumes, with illustrations by Cruikshank. Encouraged by their success he undertook to write the letterpress of the *Adventures of Mr. Pickwick*, the illustrations of which were to be executed by Seymour, a popular comic draughtsman of that time. The result was as though Shakespeare had been engaged to write

the libretto for a comic opera. The original plan contemplated a series of cockney sporting plates, the idea of the Club being wholly Dickens'. At first the book attracted very little attention, only four hundred copies being issued of the first number. But the appearance of Sam Weller in the fifth number was hailed with delight and by the time the fifteenth number was reached the sales had increased to 40,000. Seymour committed suicide after the appearance of the second number and among the artists who applied for the work was Dickens' later rival Thackeray. *Pickwick Papers* was the first of a series of fictitious works exhibiting the life and manners of the middle and lower classes, which had had scarcely any exponent. In one respect, however, this book had had neither predecessor nor progeny. Neither before nor since has there been such a literary embodiment of healthy animal spirits. That Dickens gave us no more *Pickwick Papers* is to be lamented, but it may be easily explained by the fact, that he never had the advantage of being twenty-five again. The day after the publication of the first number of *Pickwick* Dickens married Miss Catherine Hogarth, eldest daughter of the editor of the *Evening Chronicle.* In 1837 Dickens became editor of *Bentley's Miscellany,* the second number of which contained the first installment of *Oliver Twist,* Dickens' earliest sustained effort in the direction of social reform. Before the completion of this novel Dickens published in April, 1838 the first number of *Nicholas Nickleby,* in which he attacked the wrongs and cruelties inflicted upon their wretched pupils by the cheap school-masters of Yorkshire. After this beginning Dickens set lance in rest against many a social monster. He may sometimes be wrong, but he can hardly be accused of want of honesty of purpose; while quite as little can partisanship be laid to his charge, since at the very time that the country gentlemen were shaking their heads at him for his want of reverence for 'land,' he incensed the manufacturing interests by the publication of *Hard Times.* His sarcasm is peculiar; too good-natured to sneer, and with eyes, notwithstanding their indignant fire, that never lost sight of the ludicrous side of things, his style is mocking argument. Many of his social views are strongly influenced by Carlyle, to whom he is under still heavier debt for the setting and atmosphere of *The Tale of Two Cities.* After *Nicholas Nickleby* came *Master Humphrey's Clock.* This was started as a weekly series of essays and stories, somewhat on the plan of the *Spectator Club.* But the plan was soon abandoned and in its present form the book consists of two novels, *The Old Curiosity Shop* and *Barnaby Rudge.* In the former of these he showed that power of setting forth child-life and child-thought, which, before the publication of George Eliot's novels, was perhaps peculiarly his own. Many critics have objected to the pathos of little Nell as being strained and unnatural, but evidence of its general appeal is furnished by Bret Harte's beautiful tribute, *Dickens in Camp,* which

centres about the 'book wherein the Master had writ of Little Nell.' *The Old Curiosity Shop* began in a curious dreamy manner, which, though obviously a favorite with the author, was soon perceived by him to be unappreciated and was therefore prudently discontinued. This disposition of his mind toward the weird and the grotesque he subsequently developed with greater success in his *Christmas Stories*. *Barnaby Rudge* was his first, and, with the exception of *The Tale of Two Cities*, his only attempt to describe the past. Although full of interesting characters and striking scenes it is markedly inferior both in plot and atmosphere to the later historical romance. After a voyage across the Atlantic, Dickens published, 1842, his *American Notes for General Circulation*, largely but not thankfully read in this country. Dickens was disgusted with what he regarded as the lack of true Democracy in the United States, and his feelings were still further aroused by the institution of slavery and its defence in the South and the indifference of the people to the question of international copyright. A much more admirable result of his visit appeared in *Martin Chuzzlewit* (1843-44), certainly the greatest of his humorous works since the *Pickwick Papers*, and almost his last. From this period his animal spirits, a rare gift among even comic writers, and rarely lasting so long as in his own case—appeared to have deserted him. His humor, except in some rich creations, such as Mr. Micawber, was no longer so apparent, while, on the other hand, his wit and pathos increased. The *Christmas Carol* (1843) was the first of a series of five books, which appeared in the holiday season and achieved an enormous popularity. In 1844, from motives of economy and health, he went to Italy and the greater part of the following three years was spent on the Continent. One of the results of this life abroad was the publication in the *Daily News* of *Pictures from Italy*. *Dombey and Son* (1848) is the first of the novels dealing with aristocratic life. When men were expecting that Dickens would wane and weaken like other prolific writers before him, he produced a novel as fresh as the dawn. In this, he for the first time, adopted the autobiographical form, and that may have brought him some advantages; but at all events, the result was admirable. *David Copperfield* (1849-50) is generally considered by far his greatest work, and it will endure—though for very different reasons—as long as the *Pickwick Papers*. In its realization of childhood it is probably unequalled in the whole range of modern English fiction. *Bleak House* (1852-53) aroused considerable hostile criticism because of the caricature of Dickens' friend, Leigh Hunt, in the person of Horace Skimpole. *Hard Times* (1854) attacks the prevailing utilitarian political economy very much in the spirit of Carlyle, while *Little Dorrit* (1856-57) is directed against the debtors' prisons, the scene being laid in part in the Marshelsea, in which his father had been confined. In 1856 Dickens

bought Gad's Hill, on the Canterbury Road, which he had admired as a boy, and there he spent the rest of his life. Two years later he separated from his wife as a result of incompatibility. In the same year he began a series of public readings from his own works, which was immensely successful. *The Tale of Two Cities,* though the least characteristic of Dickens' novels is one of the most successful. In the careful treatment of plot structure it marks the beginning of the last period of his writing and it is almost wholly lacking in the tendency to exaggeration and caricature that marks his other works. *Great Expectations* (1860-61) and *Our Mutual Friend* (1864-65) have marked power, but they show a falling off resulting from physical weakness. In 1867 he again visited America, giving numerous readings and meeting a brilliant reception. In 1849 Dickens started a weekly periodical entitled *Household Words,* afterward merged in *All the Year Round.* Many of his later novels appeared in these journals. Dickens was till the last engaged in writing a new novel, *The Mystery of Edwin Drood,* the first number of which appeared April, 1870. He died 1870, June 9, and was buried in Westminster Abbey, with simple ceremonies, the funeral sermon being preached by Dean Stanley. He had 10 children, seven of whom survived him.

The continued popularity of Dickens is shown by the establishment in 1902 of a Dickens Fellowship, an association for the study of the novels and the places associated with them. During the summer of 1907 a Pickwick exhibition was held in London under its auspices. In the opinion of his latest critic, Chesterton, Dickens is destined to outlive all of his contemporary novelists. On the Continent he is already the most popular of all the English writers of prose fiction.

Bibliography.—The standard edition of Dickens' works is the Gadshill, (36 vols). The authorized biography is that by his friend John Forster. The letters (3 vols.) were edited by his eldest daughter and his sister-in-law. See also A. W. Ward, *Dickens* (English Men of Letters Series): G. Gissing, *Charles Dickens, a Critical Study;* F. F. Marzials, *Life of Charles Dickens* (Great Writers Series, with a bibliography); and G. F. Chesterton, *Charles Dickens, a Critical Study* (1906).

DICKER, n. *dĭk'ẽr* [Gr. *deka,* ten: Icel. *dekur;* Gael. *deich,* ten]: the number or quantity of ten, applied to such articles as skins or hides.

DICKEY, or Dicky, n. *dĭk'ĭ* [Dut. *dekken,* to cover, to protect: Ger. *decke,* a cover]: a seat behind or before in a coach; a shirt-front. *Note.*—Dick and Dicky are *OE.* words denoting 'a leather apron and bib, a leather apron': these words, however, may only be diminutives of the proper name *Dick,* such familiar applications of names of persons to tools and contrivances being quite common, as jack, jemmy, jenny, etc.

DICKIE, George William: American engineer: b. Arbroath, Scotland, 1844, July 17. He studied engineer-

ing in his father's shipyard, and with the North British Railway Company, and came to the United States in 1869. He was engaged in steamship work on the Pacific coast, designed machinery for the Comstock mines, became President of the Union Iron Works in 1883, giving especial attention to naval work. He has written: *Pumping and Hoisting Works* (1876).

DICKINS, JOHN: 1747, Aug. 24—1798, Sep. 27; b. London: Meth. Episc. minister. He was educated at Eton; removed to the United States; united with the Meth. Episc. Church in Va. 1774; preached as an evangelist till 1777, when he was received into the itinerant ministry; suggested the plan of Cokesbury College, Md., the first academic institution of his denomination in the country, 1780; preached in New York 1783–85, 1786–89; and, removing to Philadelphia 1789, published a Meth. hymn-book, and, being appointed by the conference book-steward, founded the Meth. Book Concern. He was a member of the 'Christmas Conference' 1784, and published the *Methodist Magazine* from 1797 till death. After laboring heroically through the yellow fever epidemics of 1793 and '97 died in that of 1798.

DICKINSON, *dĭk'ĭn-son*, ANNA ELIZABETH: b. Philadelphia, 1842, Oct. 28: lecturer. She received a Quaker school education, began writing anti-slavery articles for the newspapers when 14 years old, and made her first appearance as a public speaker when 15. In 1859–60, she taught school in Berks co., Penn., and for a part of 1861 was employed in the Philadelphia mint, subsequently making lecturing her profession. In the early part of this career, she confined herself to the slavery and other political subjects of the day; through the civil war she spoke and labored with great zeal in support of the union cause and the republican party, treating war issues particularly; and from the close of the war till 1876 she delivered lyceum addresses on *Reconstruction*, *Woman's Work and Wages*, *Whited Sepulchres*, *Demagogues*, and *Workingmen*, *Joan of Arc*, and *Between us be Truth*. In 1876, she went from the lecture platform to the stage, and made her debut as an actress at the Globe Theatre, Boston, in her own drama *A Crown of Thorns*, May 8. She was not successful in this and several subsequent engagements, and on retiring from the stage charged her failure to the animosity of the critics. In 1888, Sep., she resumed lecturing in behalf of the republican party. She published *What Answer?* (1868), *A Paying Investment* (1876), and *A Ragged Register of People, Places, and Opinions* (1879).

DICKINSON, CHARLES MONROE: American author: b. Lowville, N. Y., 1842, Nov. 15. He was admitted to the bar in 1865, and practiced law until 1877 in Binghamton, and New York; in 1896 he was elected presidential elector, and has been United States consul-general to Turkey since 1897. He has published a book of poems entitled, *The Children and Other Verses* (1889), the title poem of which

has received remarkable popularity; and a *History of the Dickinson Family* (1885).

DICKINSON, Daniel Stevens, American lawyer; b. Goshen, Conn., 1800, Sep. 11; d. New York 1866, Apr. 12. He was admitted to the New York bar, where he soon became prominent; was elected to the State Senate in 1836, and became a leader in the democratic party, which made him lieutenant governor in 1842, and in 1844 sent him to the United States Senate. There he became known for his pro-slavery and states-rights proclivities, and was made chairman of the finance committee. He was brought forward as a candidate for the presidency in 1852 but without success. He spent the latter part of his life at Binghamton, N. Y., in the practice of his profession.

DICKINSON, Donald McDonald: American lawyer: b. Port Ontario, N. Y., 1846, Jan. 17. He was graduated at the law department of the University of Michigan in 1866, and began the practice of law in Detroit, where he rapidly rose to a foremost position at the bar; and later practiced in Washington, D. C. He was conspicuous in politics as a democrat; was secretary of the democratic state central committee, which managed the Greeley campaign in 1872; withdrew from the Democratic party, but was won back by Mr. Tilden; and was chairman of the democratic national committee in 1876; and a member of the committee in 1884–5. He was postmaster-general of the United States in 1887–9; chairman of the democratic national campaign committee in 1892; and senior counsel for the United States before the joint high commission on the Bering Sea claims, under the fur seal arbitration in 1896–7.

DICKINSON, Emily: American poet: b. Amherst, Mass., 1830, Dec. 10; d. there 1886, May 15. Living the life of a recluse, she wrote much verse in forms peculiar to herself, but she published almost nothing; although the few pieces that appeared attracted much attention. In 1890 a collection of her poems was issued which received warm praise from competent critics; another in 1892; and her *Letters* in 1894.

DICKINSON, John, ll.d.: 1732, Nov. 13—1808, Feb. 14; b. Md.: statesman. He studied law in Philadelphia and London, began practicing in Philadelphia, became a member of the Penn. assembly 1764, of the first colonial congress 1765, and of the first continental congress 1774. In the latter body he was an accomplished debater, and author of several important state papers opposing the American policy of the British govt. He regarded the Declaration of Independence as a premature act, absented himself from the hall when the vote on its adoption was taken, and with a few other members of congress declined to sign it when adopted. For this he was defeated at the next election, when he entered the army as a private and rose to the rank of brig.gen. In 1779, he was elected to congress from Del.; 1780, became a member of the Del.

assembly, and 1781, president of the state; 1782–85 was president of Penn.; 1783, founded and liberally endowed Dickinson College, Carlisle, Penn.; and 1787, was a member of the convention that framed the federal constitution. He received his degree from the College of N. J., 1796.

DICKINSON, Jonathan: 1688, Apr. 22—1747, Oct. 17; b. Hatfield, Mass.: Presb. minister. He graduated at Yale in his 19th year; and, after studying theology, became pastor of the First Presb. Church, Elizabethtown, N. J., about 1709. As a preacher he was faithful, popular, and diligent, having a parish containing five or six congregations in as many townships. In the church at large he was eminent. Calvinistic in doctrine, and accepting the Westminster Confession, he strenuously denied the right, which has been so frequently claimed, of binding the conscience by rigid subscription to uninspired creeds. As a theological writer he ranked among the best of his day. He was a zealous advocate of missionary work, and a cordial friend to David Brainerd in his efforts among the Indian tribes. In 1746, he became one of the founders of the College of New Jersey, of which he was elected president, and which on his account was commenced at Elizabethtown. His new career of usefulness was soon cut short by his death. His name lives at Princeton in Dickinson Hall, one of the edifices erected by private munificence during the presidency of Dr. McCosh.

DICKINSON, Martha Gilbert: American poet: b. Amherst, Mass. She is a niece of Emily Dickinson (q.v.), and was married to Alexander E. Bianchi, 1903, July 24. She has published: *Within the Hedge; The Cathedral and Other Poems.*

DICKINSON. Mary Lowe: American educator and author: b. Fitchburg, Mass., 1839. She was married to John B. Dickinson, a New York banker, and after his death taught in schools in Boston, Hartford, and New York, being for some time principal of the Van Norman Institute in the last-named city. She edited the *Silver Cross* magazine for 10 years, and is now the editor of *Lend a Hand.* She has published several volumes of fiction and a collection of poems.

DICKINSON COLLEGE: at Carlisle, Penn.; founded 1783 through the liberality and interest of John Dickinson, deputy in the first colonial congress, and named after him. It was originally established as a Presb. institution, and remained such till the denominational division 1833, when it was placed under the control of the Meth. Episc. Church, which has since maintained it. Under its new auspices a new building was erected, the grounds were improved, all the departments were thoroughly reorganized, with a faithful regard to the chief condition of the transfer that its literary character should be maintained at the highest grade; and efforts were begun for a fitting endowment. In 1851, a plan of endowment was put into operation, by which scholarships providing four years' tuition were sold

for $25 each, and both the funds and number of students were greatly increased by it. During the centennial year of American Methodism (1866) over $100,000 were appropriated to its endowment fund, and with this increase in resource its course of study was enlarged by the addition of elective, scientific, and biblical studies in the junior and senior years. Its buildings are ample, comprising three colleges and a scientific building, recently erected, containing the chemical and physical laboratories, a new library hall, and a new gymnasium. The combined libraries of the college and literary societies contain about 40,000 vols., including many rare and otherwise valuable books. There were 33 instructors and 500 students in the college year 1906–7.

DICKSON, Samuel Henry: American physician: b. Charleston, S. C., 1798, Sept. 20; d. Philadelphia, 1872, March 31. He was graduated at Yale College in 1814, and immediately after commenced the study of medicine in his native city. He was instrumental in the establishment of a medical college in Charleston, and on its organization in 1824 he was called to the chair of institutes and practice of medicine. In 1858 he was called to the chair of practice of medicine in the Jefferson Medical College, Philadelphia, which he held till his death. He was author of *Manual of Pathology and Practice of Medicine; Elements of Medicine* (1835); *Essays on Pathology and Therapeutics* (1845); *Essays on Life, Sleep, Pain, etc.* (1852). It is a fact worthy of note that he delivered the first temperance address ever heard south of Mason and Dixon's line.

DICKSONIA, n. *dĭk-sō′nĭ-a* [named after James *Dickson*, an eminent cryptogamic botanist]: genus of *Polypodiaceæ*, the type of the section *Dicksonieæ*. The species are mostly arborescent ferns from the s. hemisphere. The tree-fern of St. Helena is *Dicksonia arborescens*. *Dicksonia Antarctica* is very beautiful, and is often seen in greenhouses.

DICLESIUM, n. *dī-klē′zĭ-ŭm* [Gr. *diklis*, folding two ways]: a small, dry, indehiscent pericarp, having the indurated perianth adherent to the carpel, and forming part of the shell, as in Marvel of Peru.

DICLINOUS, a. *dĭ-klī′nŭs* [Gr. *dis*, twice; *klīnē*, a couch]: in *bot.*, having the male and female organs in separate flowers, each having stamens only, or pistils only; unisexual, opposed to *monoclinous* or *hermaphrodite*.

DICLIPTERA, n. *dī-klĭp′tėr-a* [Gr. *di*, *dis*, twice, twofold; *kleiō*, I shut; *pteron*, a wing: so named because the fruit is two-valved]: genus of *Acanthaceæ*, tribe *Diclipterеæ*, of which it is the type. The sepals are five, the corolla two-lipped, its tube twisted, the stamens two. About 70 species are known from the tropics of both hemispheres. Diclipter′idæ, n. plu. *-tĕr′ĭ-dē*, family or tribe of *Acanthaceæ*.

DICOCCOUS, a. *dĭ-kŏk′kŭs* [Gr. *dis*, twice, double; *kokkos*, a berry, a kernel]: in *bot.*, having two capsules united, one cell in each; split into two cocci.

DICŒLOUS, a. *dĭ-sē′lŭs* [Gr. *di*, *dis*, twice, twofold; *koilos*, hollow]: having two cavities: used chiefly of the heart in animals.

DICOTYLEDONOUS, a. *dī′kŏt-ĭ-lē′dŏ-nŭs* [Gr. *dis*, twice, and Eng. *cotyledonous*]: having the embryo ordinarily furnished with two seed-lobes or cotyledons (q.v.) opposite to one another, or with more than two, which in that case are verticillate. Dī′cotyle′don, n. *-lē′dŏn*, a plant whose seeds consist of two lobes. In general there are only two cotyledons; a greater number being rare, but found in some of the *Coniferæ*, as spruces, fir, larch, etc., in *Ceratophyllum*, etc. It is not always easy to determine whether a plant belongs to the class of Dicotyledonous Plants or to that of Monocotyledonous Plants (q.v.), as sometimes, in the former, only a single cotyledon presents itself, e.g., in a number of species of the sub-genus *Bulbocapnos* in the genus *Corydalis;* or the cotyledons are altogether wanting, e.g., in Dodder (*Cuscuta*); or the embryo is so rudimentary in the seed, that it at first consists only of a pair of cells, e.g., in *Monotropa*. The habit of the plants is therefore also to be taken into account, particularly the structure of the stem and its mode of increase. The *radicle* of the embryo in dicotyledonous plants generally elongates itself by degrees until it forms the root of the plant itself; wherefore Richard designated these plants *Exorhizæ* (Gr. *exo*, outward, and *rhiza*, a root). The stem is exogenous (q.v.), and usually branched. The leaves have branching veins, and great variety of form. They are articulated to the stem. The calyx and corolla, when both present, are usually more distinct and dissimilar than in monocotyledonous plants.

DICOT′YLES: see Peccary.

DICRANACEÆ, n. plu. *dī-krăn-ā′sē-ē* [mod L. *dicranum;* L. suf. *-aceæ*]: family of apocarpous operculate mosses, branching by innovations, or with the tops of the fertile branches several times divided.

DICRANOCERUS, n. *dī-krăn-ŏs′ĕr-ŭs* [Gr. *dikranos*, two-headed, forked; *keras*, a horn]: genus of quadrupeds belonging to the antelope family, in which the horns are greatly compressed, rough, with an anterior process; tail very short, facial line convex; structure cervine.

DICRANUM, *dī-krā′nŭm:* genus of mosses, having a single *peristome* of 16 equidistant bifid teeth and the *calyptra* splitting up on one side (*dimidiate*). See Mosses. The species are numerous, and some are very common, growing on the ground and on moist rocks. Many have elongated branching stems.

DICROTIC, a. *dī-krŏt′ĭk* [Gr. *di*, *dis*, twice, twofold; *kroteō*, I make to rattle, I knock, I strike: *krotos*, a striking or rattling together]: an epithet applied to the pulse, when the artery, when felt, conveys the sensation of a double pulsation. Dī′crotism, n. *-izm*, the double beating of the pulse. Dicrotous, a. *dī′krŏt-us* [Gr. *dikrotos*]: beating twice as fast as usual (applied to the pulse).

DICRURIDÆ, n. plu. *dī-krôr′ĭ-dē* [*dikroos*, forked; *oura*, a tail]: family of dentirostral birds, order *Passeres*, which by its founder, G. R. Gray, was classed with the family *Ampelidæ*. The *Dicruridæ* (king-crows or drongo-shrikes) resemble the flycatchers (*Muscicapidæ*), to which they are allied, especially in having the nostrils entirely hidden by bristles. They have, however, only ten tail-feathers. The feet are essentially constructed for grasping, which, with the lengthened tail, renders walking difficult. All the species feed on insects, which they capture on the wing, returning again immediately to the perch they have just quitted or some adjoining place of rest. The members of this family range through the Ethiopian and Indian regions and the Austro-Papuan, including the Moluccas. DICRURI′NÆ, n. *-rī′nē*, sub-family of *Dicruridæ*. DICRURUS, n. *dī-krô′rus*, or DICROURUS, *dī-krow′rŭs*, genus of birds, typical of the sub-family *Dicrurinæ*. There are several species, among which may be named the *D. macrocerus*, the King of the Crows, of Bengal, and *D. musicans*, whose notes have been compared to those of the thrush and nightingale.

DICTAMEN, n. *dĭk-tā′mĕn* [L.L.—from *dicto*, I dictate: F. *dictamen*, inward consciousness]: a dictate; a precept; an injunction.

DICTAMNEÆ, n. plu. *dĭk-tăm′nē-ē* [L. *dictamnus;* suf. *-eæ*]: tribe of *Rutaceæ*. DICTAMNUS: see DITTANY.

DICTATE, v. *dĭk′tāt* [L. *dictātus*, said often, dictated—from *dictārĕ*, to say often, to assert repeatedly—from *dicĕrĕ*, to say: F. *dicter*]: to tell or order with authority; to utter words that are to be committed to writing by another; to suggest; to direct: N. an order delivered; a rule or maxim; a suggestion to the mind, as a rule or direction. DIC′TATING, imp. DIC′TATED, pp. DICTA′TOR, n. *-tā′tėr*, one invested for a time with absolute power. DICTA′TRESS, or DICTA′TRIX, n. fem. *-trĭks*, a woman who. DIC′TA′TION, n. *-shŭn*, the act of uttering words to be written by another; the speaking to, or the giving orders to, in an overbearing manner. DICTA′TORSHIP, n. the office of a dictator. DIC′TATO′RIAL, a. *-tă-tō′rĭ-ăl* [F.—L.]: absolute; unlimited; imperious; overbearing; dogmatical. DIC′TATO′RIALLY, ad. *-lĭ*.—SYN. of 'dictate, v.': to prescribe; urge; communicate; admonish; point out; of 'dictate, n.': suggestion; injunction; command; impulse; admonition; prescription; direction.

DICTA′TOR: in earliest times, the highest magistrate of the Latin Confederation, and in some of the Latin towns the title was continued long after these towns were subjected to the dominion of Rome. In the Roman Republic, the dictator was an extraordinary magistrate, irresponsible and endowed with absolute authority, whose original name was *magister populi*. The frequency of *crises*, or critical periods, in the quick, aggressive growth of the Roman state, was the occasion for such an office. The first dictator (T. Larcius or M. Valerius) was appointed B.C. 501, nine years after the expulsion of the Tarquins.

According to Livy, the immediate cause of this dictatorship was a formidable war with the Latins. In general no one could be appointed dictator who had not been previously consul, and this condition was very rarely dispensed with. Niebuhr is of opinion that the dictator was originally created or elected by the curiæ, like the kings, but it is more probable that the senate passed a decree ordering one of the consuls to name or proclaim (*dicere*) a dictator. Originally, of course, the dictator was a patrician; the first plebian who filled the office being C. Marcius Rutilus, B.C. 356, nominated by the plebian consul M. Popillius Lænas. The dictatorship could not *lawfully* be held longer than six months, nor was it ever so, except in the cases of Sulla and Cæsar, which were altogether peculiar. It must not be supposed that during a dictatorship the functions of the other magistrates were positively suspended. The consuls and other regular authorities continued to discharge their proper duties, but in subordination to the direction and command of the dictator; being for the time simply his officers. The superiority of his power, when compared with that of the consuls, appears chiefly in these three points: he was far more independent of the senate; he had a more extensive power of punishment, without any appeal; and he could not be called to account after his abdication of the dictatorship for anything that he had done during the period of his office. The *limits* of his power were as follows: he could not touch the treasury; he could not leave Italy; and he could not ride through Rome on horseback without previously obtaining the permission of the people. While the consuls had only 12 lictors, the dictator was preceded by 24, bearing the *secures* and *fasces*. To him belonged also the *sella curulis* and the *toga prætexta*. The last legally elected dictator was M. Junius Pera, who entered on his office B.C. 216. From this time *nominal* dictators were frequently appointed for the purpose of holding the elections, but even these finally disappeared, B.C. 202. Thenceforth, in critical times, a sort of dictatorial power was conferred on the consuls by the senate by the well-known formula: 'That the consuls should see to it, that the state should receive no damage.' This rendered the appointment of *dictators* no longer necessary.

DICTION, n. *dĭk'shŭn* [F. *diction*, diction, speech—from L. *dictĭōnem*, a saying, speech, style—from *dictus*, said (see DICTATE)]: style or manner of expressing ideas in words. DIC'TIONARY, n. *-er-ĭ*, a book containing the words of a language, arranged in alphabetical order, with their meanings; a lexicon: ADJ. as found or given in a dictionary. DIC'TUM, n. *-tŭm* [L. a saying]: a positive or authoritative statement; a dogmatic saying. DIC'TA, n. plu. *-tă*, dogmatic sayings.—SYN. of 'diction': phraseology; style;—of 'dictionary': glossary; lexicon; vocabulary; encyclopedia; word-book.

DIC'TIONARY [merely the English form of *dictionarium*, a word not found in classical Latin, though frequent

in monkish or mediæval Latin]: word-book; vocabulary; book, showing the words (or a certain class of words) of a language in alphabetical order, with their meanings; differing from a mere list or index, by giving explanations or information about each word included within its scope. Several other terms are used synonymously, or nearly so, with dictionary. The Greek word Lexicon is in common use for a dictionary of any dead language; but is not strictly so limited in practice, as may be seen in such works as the *Lexicon Juridicum* of Calvinus or Kahl, which is a dictionary of Roman and feudal law, of the same kind as Sir Edward Tomlin's *Law Dictionary* of English law; the word lexicon is applied sometimes also to a dictionary of a living language. The word encyclopedia has generally a wider meaning; but there are often several books exactly of the same kind, of which some are called dictionaries, and others encyclopedias. Glossary and Vocabulary are nearly synonymous with a dictionary of a language; and the words Thesaurus, Catalogue, Directory, Gazetteer, and Index, are sometimes used as a title when dictionary might be not inapplicable.

Dictionaries may be divided into two classes—(1) those whose object is to explain words and phrases; (2) those whose object is to give information about things, including also persons and events.

1. Dictionaries of languages are divided into various subclasses or species. The most common kind—what, indeed, is understood by the term dictionary (and the equivalent Greek term *Lexicon*) when used by itself—is an alphabetical list of the words composing any language, either explained in the same language, or interpreted by the corresponding words of one or more other languages. To indicate that all, or nearly all, the words of the language are embraced, the name *Thesaurus* (Treasury) is sometimes used. *Special* dictionaries contain only the words used by single authors, or classes of authors. A *Glossary* is a dictionary of unusual terms. An *Etymological* dictionary is one in which the derivation of words is the sole or a prominent object.

2. Dictionaries of things (Ger. *Realwörterbücher*), or of information, are of various kinds. When the whole field of human knowledge is embraced, it is an alphabetical encyclopedia, or cyclopedia, which name is given sometimes to dictionaries of special departments of knowledge, as the *Cyclopedia of Anatomy and Physiology;* but in all such cases, dictionary seems the more correct term. See ENCYCLOPEDIA.

There is no kind of information, within wide or narrow bounds, that may not be thrown into the dictionary form. Dictionaries of apt quotations from the classics, the Scriptures, or the fathers, were much in vogue in the 17th c. There are dictionaries of biography, of geography, of dates, of architecture, of cookery, of political economy, of fortifications—in fact, of every object of human knowledge and practice.

DICTIONARY.

Dictionaries of language, in the present sense of the word, are of modern origin. The Greeks and Romans had no idea of a book embracing all the words of their own or any foreign tongue. Glossaries, however, of unusual words and phrases were early current. The earliest work of the kind extant (though much interpolated) is the Homeric Lexicon (Gr. *Lexeis Homerikai*, 'Homeric words') of Apollonius, Alexandrine grammarian of the time of Augustus. More extensive compilations, such as the Lexicon of Suidas (q.v.) and the *Etymologicum Magnum* (q.v.), were made in the middle ages. A real dictionary first became possible after the invention of printing. A broad and sure basis for Greek lexicography was laid by Henry Stephens (q.v.) in his *Thesaurus* (1572). The well-known work of Liddell and Scott (7th ed. 1883), is based on the great German one of Passow. The *Thesaurus* of Robert Stephens inaugurated Latin lexicography: see also FORCELLINI. The earliest standard dictionaries of modern tongues were the Italian *Vocabulario della Crusca*, 1612; the Dictionary of the French Acad., 1694; and that of the Acad. at Madrid, 1726-39. Among recent standard dictionaries, the most important are the great German Dictionary, begun 1852 by the brothers Grimm, and still unfinished; Littré's French Dictionary; and the *New English Dictionary* of the Philological Soc., begun in 1857, and the first vol. of which appeared, under the editorship of Dr. James A. H. Murray, 1884; of this immense work, known as the Oxford English Dictionary, Part IV., completing Vol. III., and extending to 'FIELD,' appeared 1895, Oct. It aims to furnish 'an adequate account of the meaning, origin, and history, of English words now in general use, or known to have been in use at any time during the last 700 years.' The best English dictionaries are, (American) the Standard, Webster's, Century, Worcester's; (British) Richardson's, and Latham's edition of Johnson's dictionary; and for etymology, that of Prof. Skeat. Cassell's Dictionary is extensive; Stormonth's, not so full, is popular and serviceable. For older English words, the chief are Ælfric's Glossary (about 975), the *Promptorium Parvulorum* (about 1440), Bosworth's *Anglo-Saxon Dictionary*, Stratmann's *Dictionary of the Old English Language*, Grein's *Sprachschatz der Angelsächsischen Dichter*, and Mätzner's *Altenglische Sprachproben, nebst einem Wörterbuche*.

DICTIONARY, BIBLE: works treating of archæology, geography, history, biography and other subjects in the Bible, and arranged alphabetically, from concise reference works to more elaborate encyclopedias, have been fairly numerous but only within recent years do they approach completeness and exact scholarship. To touch briefly on the early attempts:—Eusebius (d. 340) was first with a work on the geographical names in the Old and New Testaments. Alsted (1588-1638) was pioneer in writing a dictionary of the Bible (1625), Ravenilli following in 1650 with a somewhat similar work. In 1661 appeared in London a kind of concordance to the Bible by Wilson and

others; J. Simon issued at Lyons in 1693 his *Biblical Dictionary*—a great advance being *Calmet's Dictionary* (23 vols., Paris 1707), translated into English in 1732, reissued with additions and omissions in 1793, and condensed by Edward Robinson (7th ed., Boston 1832-5). Upon Calmet many works are based: Mignés in French, also Schneider's *All. Bibl. Lex.* (1728-31) and Hezel's *Bibl. Real Lexikon* (1783-5) in German.

A marked improvement was shown in the incomplete Gotha *Biblical Ency.* (1793-8), edited by scholarly critics like Michaelis, Semler, Eichhorn, etc., but it was surpassed by Winer's *Bibl. Realwörterbuch* (Leipsic 1820), which has appeared in several editions and remains still authoritative. This was followed by a number of popular works in the field until Herzog's *Real-Encyclopedia* was issued, latest edition 1896, in which many scholars cooperated. Schenkel's *Bibel Lexikon* (1869-75) and Riehn's *Handwörterb. des Bibl. Alterthums* (1874, 2d ed. 1804) are judicious condensations by noted experts. Kitto's *A Cyclopedia of Bibl. Lit.* (Edin., 1843-5) revised and enlarged (Phila., 1865), was a useful work, but not so scholarly as Smith's *Dictionary of the Bible* (London 1860), which has been issued in revised editions. Still of value for its scope and scholarship is McClintock & Strong's *Cyclopedia* (New York 1867-87), but needing complete revision. Apart from minor works in this department, can be mentioned as of high character, Cheyne & Black's *Encyc. Bibl.* (1899) and Hasting's *Dictionary of the Bible* (1898-1902). Vigouroux, *Dict, de la Bible* (Paris 1895), the *Catholic Encyclopedia* (New York 1907) and *The Jewish Encyclopedia* which is on a broader plan, with articles by non-Jewish scholars as well, are of permanent value. Hamburger's elaborate *Real-Encycl. des Judenthums*, etc., treats Bible topics from the Jewish point of view and apart from some imperfections is a valuable storehouse of material. A number of more general works have been issued for popular use but require no special mention.

DICTYDIUM, n. *dĭk-tĭd'ĭ-ŭm* [Gr. *diktudion*, dim. of *diktuon*, a net]: genus of *Myxogastres* (gasteromycetous fungi). They are exceedingly elegant little plants, growing upon rotton wood. When the spores are expelled the transparent case appears like a cage, formed of the veins alone.

DICTYOGENS, n. plu. *dĭk'tĭ-ō-jĕns* [Gr. *diktŭŏn*, a net; *gennăō*, I produce]: in *botany*, class of plants, established by Lindley for the reception of a comparatively small number of nat. orders, genera, and species, usually included by other botanists among *Endogens* or Endogenous Plants (q.v.), but which, while they agree with endogens in the structure of the embryo, differ from them in the stem and leaves. They seem, in some sense, intermediate; as the annual branches or aërial stems have indeed the endogenous structure, but the rhizomes or subterranean stems more resemble the structure exogenous plants (q.v.), with pith, medullary rays, and wedge-like vascular bundles.

The leaves are broad and net veined, usually disarticulating with the stem. The most important nat. orders referred by Lindley to this class are *Dioscoreaceæ* and *Smilaceæ*, and the most important plants belonging to it are the different species of Yam and Sarsaparilla.

DICTYOPTERIS, n. *dĭk'tĭ-ŏp'tĕr-ĭs* [Gr. *diktŭŏn*, a net; *pteris*, a fern]: in *geol.*, a genus of carboniferous ferns. Dic'tyophyl'lum, n. *-ŏ-fĭl'lŭm* [Gr. *phullon*, a leaf]: a general name applied to all unknown fossil dicotyledonous leaves having a net-like structure.

DICTYOTA, n. *dĭk-tĭ-ō'ta* [Gr. *diktuōtos*, reticulated, net-like]: genus of algæ, typical of the family *Dictyotidæ*. Dictyo'teæ, n. plu. *-tē-ē*, order of algæ, with dark seeds, superficial spores, or cysts, arranged in spots or lines, fronds flat or thread-like. Dictyo'tidæ, n. plu. *-tĭ-dē*, family of algæ, order *Fucaceæ*, tribe *Halysereæ*.

DICTYS, *dĭk'tĭs*, of Crete: historian and alleged author of a history of the Trojan war. The early belief was that he accompanied Idomeneus, King of Crete, to the siege of Troy, wrote a detailed history of the war, and at his death ordered it to be buried in his tomb, where it remained till a violent earthquake in the reign of Nero opened the tomb and disclosed the history to some shepherds, who took it to Rome. A Latin translation in five books, now extant, is said by some authorities to have been composed in the 15th c., and by others in the age of Constantine, and falsely attributed to Dictys. It was earnestly contended by many ancient writers that Homer was indebted to this work for the idea and information that led him to compose the great epics, the *Iliad* and the *Odyssey*. A 4to ed. of Dictys was published by Masellus, Mediol, 1477.

DICYNODON, n. *dī-sĭn'ō-dŏn*, Dicynodontia, n. plu. *dĭs'ĭn-ō-dŏn'shĭ-ă* [Gr. *dis*, twice; *kŭŏn*, a dog; *odonta*, a tooth—*lit.*, two-dog-teeth]: name given by Owen to a genus of very peculiar fossil reptiles, whose remains have been found in s. Africa and Bengal. The true age of the rock in which they occur has not been ascertained; the accompanying organisms indicate that it is Triassic. Few bones of these animals, save those of the skull, have been sent to Europe. A complete restoration of one would be a most valuable addition, not only to paleontology, but to systematic zoology as well; for the numerous skulls that have been examined, have been sufficient to show that this is one of those anomalous forms which unite in their structure the characteristics of widely different animals. It has affinities with the crocodile, the lizard, and the tortoise, though perhaps the completely closed orbits and the sharp compressed jaws ally it more closely to the tortoise. Its lower jaw also is covered with a horny plate, as in the tortoise. The most remarkable peculiarity is the existence of a pair of large sharp-pointed tusks, one from each side of the upper jaw, growing downward as in the mammalian morse or walrus. The generic name, meaning

'two canine teeth,' has been given to them from these singular tusks, peculiar to this genus. The articulating surfaces of the vertebræ are both hollow—a fishlike peculiarity, from which it might be argued that these reptiles were good swimmers; probably they lived constantly in the water, but the construction of the bony passages of the nostrils proves that they must have come to the surface to breathe air. Four species have been discovered.

DICYPELLIUM, n. *dī-sĭ-pĕl'lĭ-ŭm* [Gr. *di*, *dis*, twice, and dim. of *kupellon*, a goblet, a cup]: genus of *Lauraceæ*. The bark of *Caryophyllatum* is the clove cassia of Brazil.

DICYSTIDEA, n. plu. *dī-sĭs-tĭd'ē-a* [Gr. *di*, *dis*, twofold; *kustis*, a bladder]: order of protozoa, akin to the *Gregarinida*.

DIDACTIC, a. *dĭ-dăk'tĭk*, or DIDAC'TICAL, a. *-tĭ-kăl* [Gr. *didăktĭkos*, taught, apt to teach—from *didas'ko*, I teach]: adapted or intended to teach; preceptive; containing precepts or rules. DIDAC'TICALLY, ad. *-kăl-lĭ*. DIDACTICS, n. plu. *dĭ-dăk'tĭks*, the science of teaching; the precepts and rules of teaching; the best methods of systematic instruction. DIDACTIC POETRY, kind of poetry which aims, or seems to aim, at instruction, making pleasure entirely subservient to this. It has been disputed whether or not the existence of a kind of poetry especially entitled to the name didactic, consists with the nature and object of the poetic art. For it is held that, to point out instruction as the peculiar object of one kind of poetry, is to overlook the high aim of all poetry; and that a poem may be in the highest sense didactic, which yet is epic, dramatic, or lyric in its form; and the Book of Job, the Psalms, and other poems in the Sacred Scriptures, are cited as examples. In the poems usually called didactic, the information or instruction given in verse is accompanied with poetic reflections, illustrations, episodes, etc.

DIDACHE: a code, whose full name is 'The Treasury of the Twelve Apostles,' for the instruction of proselytes, which was adapted from the synagogue by the early church authorities and arranged, with many changes, into a convenient manual of their own. Its discovery by Bryennios in 1873, among a number of old Christian manuscripts in Constantinople, and its subsequent publication by him (1883), awakened much interest, for it had apparently been lost since the 9th c. Various theories as to its origin and character now arose, the one most accepted being advanced by Charles Taylor (1886), that it was in two divisions. The first part, concerning the *Two Ways* (1:VI.) was originally a code of synagogue rules for the reception of proselytes, changed later into a church manual and ascribed to Jesus and the apostles. There were added, however, rules and regulations for baptism, fasting and prayer, benedictions over the wine and the bread, and for the general government of the community. See R. Harris, *The Teaching of the Apostles*

(1887); Ph. Schaff, *The Oldest Church Manual* (1886); C. Taylor, *The Teaching of the Twelve Apostles* (1886).

DIDACTYLOUS, a. *dī-dăk'tĭ-lŭs* [Gr. *dis*, twice; *daktŭlos*, a finger]: having two fingers or toes. DIDAC'TYL, a. *-tĭl*, having two toes: N. an animal having two toes.

DIDAPPER, n. *dĭ'dăp-pėr* [corrupted from *diver-dipper* = diver-diver]: a natatorial water-bird—so named as constantly diving under water; the little grebe or dabchick.

DIDASCALIA: a Greek treatise which contains rules for church life, in eight books, under the better known name *Apostolic Constitutions*, with the full title *Constitution of the Holy Apostles, by Clemens, Bishop and Citizen of Rome-Catholic Didascalia*. On careful examination, this work like the *Didache* (q.v.), seems to be based on an original Hebrew production which has been changed into an authoritative Christian work. Another version in Syriac, etc., is considered by many the original, although others give convincing proofs that the *Apostolic Constitutions* is the original, and the Syriac *Didascalia*, a condensation.

Containing a large amount of material from unknown Jewish sources, it is of value for the light thrown on the New Testament and the Talmud. Its style resembles that of the *Didache*, and the work merits close reading by students of the early centuries. The parallels to the early Jewish liturgy are many and striking, while it is very important for the history of Christian institutions.

DIDDER, v. *dĭd'dėr* [Ger. *zittern*, to tremble]: to shiver as with cold.

DIDDLE, v. *dĭd'l* [Gael. *didil*, great love or kindness: Icel. *dadra*, to wag the tail: Scot. *diddle*, to shake, to jog, frequentative of *do*]: to move as a child in walking; to totter; to cheat. DID'DLING, imp. DID'DLED, pp. *-ld*.

DIDECAHEDRAL, a. *dī-dĕk-a-hē'dral* [Gr. *dis*, twice; Eng. *decahedral*]: having the form of a decahedral prism, with pentahedral summits.

DIDELPHYS, or DIDELPHIS, n. plu. *dī-dĕl'fĭs* [Gr. *dis*, twice; *delphus*, a womb]: the opossum (see OPOSSUM). DIDEL'PHIDÆ, n. plu. *-fĭ'dē*, the opossum family. DIDEL'PHIA: see under MAMMALIA. DIDELPHOID, a. *dī-dĕl'foyd* [Gr. *eidos*, appearance]: having two wombs: having the two horns of the uterus separate.

DIDEROT, *dē-dro'*, DENIS: 1713, Oct. 5—1784, July 30: b. Langres, in Champagne. French encyclopedist and philosophical writer. He was educated for the priesthood at the college of his native town, and subsequently at that of D'Harcourt, Paris; but disliking the clerical office, and after having made a trial of law, he finally became a *littérateur*. For some years his mode of life was very precarious. On one occasion, reduced to extremities, he seriously resolved that if he should ever prosper, he, not ignorant of misfortune, would never disregard the applications of the indigent. This resolution was religiously kept; for

after having attained comparative affluence, he was continually surrounded by applicants desirous of obtaining assistance, which, whether in the shape of money or instruction, Diderot was always willing to give. In 1743, though very poor, Diderot married, and necessity drove him to increased exertions. He translated the *History of Greece* from the English of Stanyan, receiving 100 crowns. Soon afterward followed the *Essai sur le Mérite et la Vertu;* the *Pensées Philosophiques*, written, it is said, in the space of four days; and the *Interprétation de la Nature;* also *Lettre sur les Aveugles*, which caused his confinement for three months in the prison of Vincennes. Believing that it was, with other things, his vocation to regenerate the theatre, he produced a melodrama (1758), entitled *Le Père de Famille.* It was unsuccessful, and was followed by others equally so, so that it was said, 'Le Père de Famille a été le père d'une famille déplorable.'

But Diderot's great work was the *Encyclopédie*, of which he and D'Alembert were joint-editors It was commenced 1749. Diderot besides revising all the articles, wrote the departments of history, of ancient philosophy, and of the mechanical arts. He also wrote art criticisms, 1765–67, showing a readiness in interpreting the meaning of a picture, and a power in reproducing it vividly in words, unequalled by any writer of his time. Toward the last of his life, Diderot, who had never saved any money, determined to sell his library, to provide for his only daughter. The empress Catherine of Russia, having been informed by her French ambassador of his intention, bought the library, on condition that Diderot himself should be librarian, and undertake the care of it at a salary of 1,000 francs yearly. In 1773, he set out for St. Petersburg to thank his imperial benefactress, returning in the following year. But his health, impaired by his journey, gave way, and he soon died.

Diderot had worked at the Encyclopedia for about thirty years. His fitness, natural and acquired, for this species of literary labor was complete. With the advantage of an excellent education, he had a great love of truth, and a curiosity to ascertain the real relations of any subject upon which he was engaged. He was distinguished by a swiftness and dexterity of intellect, that enabled him to catch the salient points of his topic, and to present them in the best light. As regards religion, Diderot was an atheist, sincere even to fanaticism in his opinions, and anxious to indoctrinate his countrymen with his own skepticism. The *Encyclopédie* became a vehicle for the indirect propagation of his views. One of the last recorded sayings of Diderot is very characteristic: 'The first step toward philosophy is incredulity;' but unfortunately Diderot thought it was also the last. An edition, 20 vols., of all Diderot's works, by Assézat and Tourneux, was completed 1877. See John Morley's monograph on *Diderot and the Encyclopœdists* (2 vols. 1878).

DIDIER, *dē'dē'ā*, CHARLES: French poet and novelist: b. Geneva 1805; d. Paris, 1864, Mar. 8. He wrote some

novels designed to awaken patriotic sentiment in Italy, and to make known the struggles of the Carbonari and other revolutionists against Austrian and papal dominion. Among these were *Underground Rome* (1833); *The Roman Campagna* (1842); and *Fifty Years in the Wilderness* (1857). His lyric poems, *Melodies* (1827), are characterized less by force than by sweetness.

DIDIER, Eugene Lemoine: American author: b. Baltimore, Md., 1838, Dec. 22. He edited a weekly paper called *Southern Society* 1867-9. Among his published works are: *A Life of Poe* (1876); *Life and Letters of Madame Bonaparte* (1879); *Primer of Criticism* (1883); *The Political Adventures of James G. Blaine.*

DIDO, *dī'dō*, or Elissa, *ē-lĭs'sa:* according to legend, the foundress of Carthage; daughter of a king of Tyre, called by some Agenor or Belus, by others Mutgo or Matgenus. His successor, Pygmalion, brother of Dido, murdered Dido's husband and uncle, a priest of Hercules named Acerbas; named by Virgil, Sichæus. With the treasures of Sichæus, which Pygmalion had sought for in vain, and accompanied by many Tyrians, Dido escaped to sea. She landed in Africa, not far from the Phœnician colony of Utica, and built a citadel called Byrsa (from Gr. *Bursa*, the hide of a bull), on a piece of ground which she had bought from the Numidian king Hiarbas. The meaning of the word Byrsa, gave rise to the legend that Dido purchased as much land as could be encompassed with a bullock's hide. After the agreement she cut the hide into thin thongs, and thus inclosed a large territory. Here she built the city of Carthage. To avoid being compelled to marry Hiarbas, she stabbed herself on a funeral pile, which she had caused to be erected, and after her death was honored as a deity by her subjects. Virgil ascribes the death of Dido to her unrequited passion for Æneas; but many of the ancient writers conceived that the poet had committed an anachronism in making her contemporary with the Trojan prince. The more general opinion was, that Dido built Carthage 50 to 100 years before the foundation of Rome.

DIDOT, *de-do'*, Francois: 1689-1757: French printer and publisher, first of his family (afterward so noted) to attain eminence. His principal professional achievement was the publication of the *Voyages* of his friend the Abbé Prévost, 20 vols., perfect as regards the text, and enriched with a great number of engravings and geographical maps. Didot had 11 children, of whom two—François Ambroise Didot (1730-1804) and Pierre François Didot (1732-95), gained distinction as printers.

Didot, Henri: 1765-1855; eldest son of Pierre François Didot, made himself famous as engraver, type-founder, and mechanician. He was 66 years old when he engraved for his well-known 'microscopic' editions of eminent authors, those characters which are the *ne plus ultra* of typographical art. A daughter of his brother, the third

son of Pierre François Didot, married Bernardin de Saint-Pierre, who was for some time associated with the Didots in their paper manufactury of Essonne; and in his country-house near that place wrote *Paul et Virginie*.

Didot, Pierre: 1760-1838, eldest son of François Ambroise Didot; still further increased the fame of his family. His Louvre editions of *Virgile*, *Horace*, *Racine*, and *La Fontaine* are magnificent. At the Exhibition of the Products of Industry 1801, a jury declared his *Racine* to be *la plus parfaite production typographique de tous les âges*. Besides a great number of works, not less remarkable for typographical perfection than for literary value, such as the *Voyages de Denon*, Didot published a collection of the French *chefs-d'œuvre*, dedicated *Aux amis de l'Art Typographique*. He was also an able *littérateur*.

Didot, Firmin: 1764-1836, Apr. 24; b. Paris; son of François Ambroise Didot. As printer, and especially as engraver and founder, he raised the family name to the pinnacle of professional eminence. The absolutely perfect Roman characters, used in the Louvre editions printed by his elder brother, Pierre Didot, were engraved and cast by him. Firmin Didot applied the stereotyping process to the Logarithmic Tables of Callet, a work that required the most rigorous accuracy of execution, and which, through this means, is perfectly free from error or blemish. The whole of the French, as well as most of the Italian and English classics, were published by him according to the same process. These stereotypic editions (the word *stereotypic* was invented by him) were wonderfully correct and cheap; *Virgile* is without a blemish, is ornamented with vignettes, and was sold for 15 sous (abt. 14¼ cents); it made a kind of revolution in the book-trade of France. The most distinguished foreigners were accustomed to visit Didot's establishment as one of the great sights of Paris. The emperor Alexander, when in Paris, 1814, minutely examined every department of it; and placed under Didot two young Russians, to be instructed in all the branches of typography. Some of the most celebrated continental printers served their apprenticeship with him. In 1827, Didot retired from business, to give attention wholly to his duties as *député*. A sage friend of freedom, he attached himself to the moderate and constitutional opposition, headed by Royer Collard. Didot also obtained considerable reputation as an author by his tragedies, *La Reine de Portugal* and *La Mort d'Annibal*, and several volumes of metrical translation from the classics.

His sons, Ambroise Firmin Didot (1790, Dec. 20—1876, Feb.), and Hyacinthe Didot, (b. 1794, Mar. 11), long carried on the family business (aided by their sons, Alfred Didot and Paul Didot), under the firm of Firmin Didot, Fréres; and in the hands of the survivors, the business still retains its magnitude.

DIDUNCULUS, n. *dī-dŭn'kū-lŭs* [L. dim of *didus* (q.v.)]: typical genus of the *Didunculidæ*. *D. strigirostris* inhabits the Navigators' Isles. Diduncu'lidæ, *-kū'lĭ-dē*,

family of *Columbacci* (pigeons), which they connect with the extinct dodo (q.v.).

DIDUS, n. *dī′dŭs* [mod. L.]: genus of *Rasores*, sub-ord. *Columbacei*. *D. ineptus* is the dodo (q.v.). DIDIDÆ, *dī′dĭ-dē*, family of birds, of which Didus is the type.

DIDYMIUM, n. *dĭ-dĭm′ĭ′ŭm* [Gr. *didumos*, double, twin]: formerly supposed to be a metallic element, to which the symbol D or Di was assigned. It was first found in the mineral cerite in 1842, in association with lanthaneum, and closely resembling it;—hence the name. Recent researches have shown that didymium is not an elementary body, but that it consists principally of two other elements, which are respectively known as neodymium and praseodymium. This discovery renders the name 'didymium' singularly appropriate for the original substance.

DIDYMOCARPEÆ, n. plu. *dĭd-ĭm-o-kăr′pē-ē* [L. *didymocarpus*—from Gr. *didumos*, twin; *karpos*, fruit]: sub-order of plants belonging to the order *Bignoniaceæ*. DIDYMOCAR′PUS, *-pŭs*, typical genus of the sub-order *Didymocarpeæ*.

DIDYMOHELIX, n. *dĭd-ĭm-o-hē′lĭks* [Gr. *didumos*, twin; *hēlix*, a fellow, a comrade]: genus of confervoid algæ with the threads consisting of pairs of microscopic, interlacing filaments. They ordinarily occur in ferruginous bog-water.

DIDYMOPRIUM, n. *dĭd-ĭm-ŏp′rĭ-ŭm* [Gr. *didumos*, twin; *priōn*, a saw]: genus of *Desmidiaceæ*, differing from *Desmidium* in having only two processes, not being angular, etc.

DIDYMUS, *dĭd′ĭ-mŭs*, OF ALEXANDRIA: A.D.—308 AD. 395; b. Egypt: theologian and philosopher. He lost his eye-sight when 5 years old, but became eminent for his attainments in theology, philosophy, and in various sciences, and was chosen to fill the theological chair at Alexandria. In this office the number of his pupils bespoke the high public esteem of his abilities, and the books which he wrote showed his learning and mental power. Among his pupils were Saint Jerome, Isidore, and Rufinus. Of his numerous works but four have been preserved: *On the Trinity; On the Holy Spirit; Against the Manicheans;* and *On the Canonical Epistles*.

DIDYNAMIA, n. *dĭd-ĭ-nā′mĭ-a* [Gr. *dis*, twice; *dunămis*, power]: in the Linnæan system of plants the fourteenth class consisting of those which have four stamens, two long and two short. It contains two orders, *Gymnospermia* and *Angiospermia*. DIDYNAMOUS, a. *dī-dĭn′ă-mus*, having two long and two short stamens, as in the dead-nettles.

DIE, v. *dī* [AS. *deadian;* Icel. *deyja;* Dan. *dôe*, to die: Gael. *dioth*]: to cease to live; to expire; to perish; to lose life; to languish, as from weakness, discouragement, or love; to cease or become less distinct, as sound; to vanish: to become vapid. DY′ING, imp. DIED, pp. *dīd*.—SYN. of

'die': to decease; depart; vanish, recede; decay; decline; cease; sink; faint.

DIE, n. *dī* [Ar. *daddon*, game of dice: It. *dado;* OF. *det;* F. *dé*, a die—from mid. L. *dadus*, a die—from L. *dătŭm*, given, what is thrown on the table]: a small cube of bone or ivory with dots numbering 1 to 6 on the faces, used in gaming, by being shaken in a small tubular box and then thrown from it; chance; hazard. DICE, n. plu. *dīs:* usually thrown in pairs. When the dice are true cubes, there is no plan by which any kind of shaking can bring out a desired number; but some gamblers use loaded dice, plugged with lead on a particular side to bring certain numbers uppermost: see GAMBLING. THE DIE IS CAST, everything is hazarded; the last chance is taken or offered.

DIE, n. *dī* [Gael. *dith*, to press, to impress: F. *dé;* OF. *del* and *déel*, a thimble—from mid. L. *dĭgĭtālĕ*, a finger]: a stamp of metal used in striking coins, medals, etc. DIES, n. plu. *dīz*. DIE-SINKER, one who cuts dies. DIE-STOCK, a frame for holding the dies for cutting external screw-threads.

DIÉ, ST., *săng dė-ā':* town of France, dept. of Vosges, on the Meurthe, 25 m. n.e. of Epinal. It is handsomely built; its streets are clean and regular. Die is the seat of a bishop, has an old cathedral church, and various important educational institutions. It has manufactures of cotton goods, with some trade in corn, cattle, flax, hemp, paper, ironmongery, etc. There are copper and iron mines, ironworks, and marble quarries in the neighborhood. Pop. about 17,000.

DIEBITSCH-SABALKANSKI, *dē'bĭtch-sâ-bâl-kân'skē*, HANS KARL FRIEDRICH ANTON, Count: 1785, May 13—1831, June 10; b. Silesia: Russian general. He was educated in the Milit. Acad., Berlin, appointed to the Russian imperial guard 1801, promoted capt. for gallantry at Austerlitz 1805, studied milit. science 5 years, and became maj.gen. 1812. In 1813, while chief of staff to Gen. Wittgenstein, he greatly distinguished himself at Lützen, and later at Leipsic, where the czar appointed him lieut.-gen. on the battle-field. He was appointed chief of the imperial staff 1820, went with Czar Alexander on his tour of the s. of Russia, and was with him at his death, 1825, On the accession of Nicholas he was appointed baron, then count. He was placed in command of a large army in the Russo-Turkish war of 1828-9, took Varna, marched across the Balkans, and forced the peace of Adrianople. He received the name *Sabalkanski* (crosser of the Balkan) from this feat, became gen.-in-chief 1829, and field-marshal and gov. of the provinces bordering on Poland 1830. He crossed the Polish frontier 1831, Jan. 25, fought several indecisive engagements and battles, and died of cholera suddenly in his camp, June 10.

DIEDENHOFEN, *dē'den-hė-fĕn* (Fr. THIONVILLE): fortified town, province of Alsace-Lorraine, Germany, on the Moselle river and the Metz and Luxemburg railroad, 14

m. n. of Metz. It has numerous manufactures, a public gymnasium, and botanic garden. It was frequently the residence of the Carlovingian kings of France, belonged at times to the Count of Luxemburg, and to Burgundy, Austria, and Spain, was annexed to France 1643, and after being bombarded by 85 guns for 3 days without cessation surrendered to the Germans, 1870, Nov. 24, with its garrison of 4,000 men, 187 guns, and a large amount of milit. stores.

DIEFENBACH, *dēf'ĕn-bâċh*, Lorenz: German philologist: b. Ostheim, Hesse, 1806, July 29; d. Frankfort-on-Main 1883, March 28. He was 12 years pastor and librarian at Solms-Laubach. In 1848 he settled at Frankfort-on-Main, where in 1865 he was appointed second librarian to the city. His literary industry was enormous, embracing poetry and romances, as well as those more ponderous works by which his name will live. His greatest books are: *Celtica* (1839–40); *Vergleichendes Wörterbuch der Gothischen Sprache* (1846–51); *Glossarium Latino-Germanicum mediæ et infimæ ætatis*, a supplement to Ducange's well-known *Glossary* (1857); *Origines Europææ; Hoch-und Niederdeutsches Wörterbuch* (with Wülcker, 2 vols. 1874–5).

DIEFFENBACH, *dēf'fĕn-bâċh*, Johann Friedrich: 1792–1847; b. Königsberg, Prussia: surgeon. He had begun the study of theology when the war of liberation broke out, in which he took part as a volunteer. In 1816, he exchanged the study of theology for that of medicine, especially surgery. After studying at Bonn and elsewhere, and travelling in France, he took his degree 1822, and commenced practice in Berlin, where he soon attained distinction as an operator, and in 1840 was promoted to be prof. and director of clinical surgery. Besides eminent skill in all the usual operations with the knife, Dieffenbach introduced many improvements, particularly in the art of forming new noses, lips, eyelids, and the like, as well as in cutting the muscles for squinting and stammering. Among his writings were: *Die Transfusion des Bluts und die Einspritzung der Arzneien in die Adern* (Berl. 1828); *Ueber die Durchschneidung der Sehnen und Muskeln* (Berl. 1841); *Die Heilung des Stotterns* (Berl. 1841); *Die Operative Chirurgie* (12 vols. Leip. 1844–48), his chief work, translated into several languages.

DIEFFENBACHIA, n. plu. *dēf'n-băk'ĭ-ă* [after M. *Dieffenbach*]: a genus of tropical plants of Amer. ord. *Arācĕæ*, consisting of herbs having tall fleshy stems; the new greenhouse species has a leaf-blade of about 12 × 4 in. whose centre is beautifully variegated.

DIEGESIS, n. *di-ĕ-jē'sĭs* [Gr.—from *diēgeomai*, I set out in detail, I narrate]: a description, narrative, history, or recital.

DIE'GO, San: see San Diego.

DIELECTRIC, *dī-ē-lĕk'trĭk*, (1) The property of opposing the flow of current which certain materials have.

Another term for insulating ability. (2) Any insulating material separating conductors having a difference of potential.

DIELYTRA, *dī-ē-lĭt'ra:* mistaken name of the plant DICENTRA (q.v.) [early misprinted *Diclytra*, then mistakenly corrected *Dielytra*]: *D. spectabilis*, native of Japan, and perhaps also of China, was introduced into Britain from the island of Chusan 1846, and rapidly became a general favorite, on account of its long racemes of drooping, delicate, rosy-pink flowers. It is now seen not only in green-houses, but commonly in cottage-windows, and even in cottage-gardens, though in more northern regions it seldom attains its full luxuriance in the open air. It flourishes in gardens of the n. United States.

DIEL'MAN, FREDERICK: American painter: b. Hanover, Germany, 1847, Dec. 25. He removed to the United States in childhood, and was graduated at Calvert College. He was a topographer and draughtsman in the United States Engineer department 1866–72; studied art under Diaz at Munich, and established a studio in New York in 1876. He was the designer of the mosaic panels, *Law* and *History* in the new Congressional Library at Washington, D. C.; of the mosaic *Thrift* in the Albany Savings Banks; and of the decorations in the building of the *Washington Evening Star*. He was president of the National Academy of Design in 1900.

DIEPENBECK, *dē'pĕn-bĕk*, ABRAHAM VAN: prob. 1607–75; b. Hertogenbosch (Bois-le-Duc): Flemish painter. At first he confined himself to painting on glass in which he acquired the best reputation of his time; but having conceived a disgust for this kind of painting, on account of the cracking of the glass, which he could in no way prevent, he abandoned it, and became a pupil of Rubens. He then went to Rome, and on his return to Belgium became a sort of assistant to his master. In 1641, he was elected president of the Antwerp Acad., an honor which he retained till his death. Diepenbeck painted much, and with wonderful facility, on tapestry and wainscoting. He certainly imitated Rubens, but with great freedom and force of coloring. His works consist mostly of designs for title-pages, theses, devotional subjects, and the decoration of books. They show great fertility and liveliness of genius, but are in general hurriedly and imperfectly finished. His masterpiece in this way is the *Tableaux du Temple des Muses* (Paris 1655), a series of designs, 59 in number, engraved by the best artists of the time—Bloemart, Maltram, etc. Those of Bellerophon, Orpheus, the Dioscuri, Leander, etc., have been pronounced unsurpassed. His oil paintings on canvas are few, but the churches of Antwerp have many windows painted by him. Diepenbeck resided in England for some time during the reign of Charles I., and painted several landscapes and animals for William Cavendish, Duke of Newcastle.

DIEPPE, *dē-ĕp':* seaport town of France, dept. of Seine-Inférieure, at the mouth of the river Arques, on the Eng-

lish Channel; lat. 49° 55′, long. 1° 5′ e. Dieppe is between two high ranges of chalk cliffs, is regularly built, with tolerably wide clean streets running parallel to the sea: and the houses—mostly of stone and brick, with high slanting roofs—are picturesque. It is walled, has a castle occupying a high cliff at the w. end of the town, which it commands, as well as the harbor, which lies n.e., and admits vessels of 500 tons. West of the old castle lies the little fishing suburb of Pollet, far from beautiful in appearance, but exceedingly interesting from the fact that the inhabitants differ in language, manners, and costume from the rest of Upper Normandy, and are supposed to be descendants of those Saxons who settled on the French coast during the period of the Merovingian kings. Some interesting historical associations attach to the castle of Dieppe. Here Henry IV.—the people of Dieppe having been the first to acknowledge his right to the throne of France—retired before the forces of the League, previous to the decisive battle of Arques, fought within four miles of Dieppe; and here the Duchess of Longueville, noted as a leader of the party of the Fronde, sought refuge for a time from the royal power that she had defied. The castle is now occupied as a barrack. The other principal buildings are the churches of St. Jacques and St. Remi, the theatre and a bathing establishment. The town has several squares, and is adorned by nearly 70 fountains, which derive their supply of water from an aqueduct about three m. long. Dieppe being one of the principal watering-places of France, has a great accession of visitors during the summer months; and a large number of huts for the accommodation of bathers (bathing-machines being dispensed with) line the shores. The manufactures are lace, fine linen, and paper; and the carved articles of horn, bone, and ivory have long been famous. There are also ship building yards, sugar refineries, rope-walks, and distilleries; and the fisheries—both coast and Newfoundland—are important, almost the whole of the population of the suburb of Pollet being engaged in them. The rise of Havre has greatly injured the trade of Dieppe. Dieppe is a favorite landing-place of English tourists visiting France. Pop. 22,771.

DIERVILLA, n. *dī-ėr-vĭl'la* [named by Tournefort after M. *Dierville*, who brought him specimens of it from Canada] genus of erect shrubs, belonging to the order *Caprifoliaceæ*.

DIE′-SINKING: art of engraving the die or stamp used for striking the impression on coins, etc., and for stamping thin plates of metal into various devices.

The importance of die-sinking has much increased of late on account of the great extension of the process of stamping thin metal. Many kinds of work formerly bent into shape by the hammer and punch, are now struck by a few blows between suitable dies; e.g., the ornamental work, of gas-fittings, window-curtain cornices, common jewelry, ornamental trays, dishes, boxes, etc. For such purposes, a pair of dies is required, one in relief, the other in intaglio,

and the metal is pressed between them. Not only are ornamental articles stamped in this manner, but useful articles, composed of many parts, are made entirely by cutters and dies, each part being cut and stamped by a pair of dies, and then the parts united by another pair, the junction being effected by over-laps, which the uniting dies press into their places: see BUTTONS. The astonishing cheapness of many of the Birmingham products is due mainly to the use of dies for doing by a single blow the work that formerly required long and tedious manipulation: see STAMPING.

The most ancient and familiar application of dies, is in the striking of coins and medals; the method of sinking the dies used for this purpose will serve to illustrate the general method. Suppose the coin to be of the size of a quarter of a dollar: a cylindrical piece of steel, three or four inches in length, and two in diameter, is prepared by slightly rounding one end of the cylinder, then turning and smoothing upon the middle of this a flat face equal to the size of the coin. This blank die, which is carefully softened, is then engraved with the device of the coin in intaglio. This is a very delicate and artistic process, and is effected by a great number of careful touches with small and very hard steel tools. The face of the die is now hardened by placing it face downward in a crucible upon a layer of bone-dust, or a mixture of charcoal and oil. In this position it is raised to a cherry-red heat, then taken out, and plunged into water. When properly tempered, it is in a state to be used for stamping the coin; but dies of superior workmanship, from which many impressions are required, are not thus directly used, as the expense of engraving is very great, and the risk of breakage considerable. This first engraved die, called the matrix, is therefore reserved only for making other dies. An impression in relief is made from this matrix on a small block of soft steel, which is called the puncheon; this is retouched and hardened, and from it the dies directly used for striking the coins or medals are impressed.

When the engraving is not very costly, or a small number of impressions are required, or a soft metal is to be stamped, as in livery buttons, the work is stamped directly from the engraved die or matrix. When the device is in high relief, and the metal is hard, many heavy blows are required. Some of the finest large bronze medals require two or three hundred blows for each impression, and the medal has to be annealed by heating between every two or three blows. It is on this account that the difference between the price of pewter and bronze medals of the same subject is so great, the pewter being so much softer. Copper, though harder than pewter, is much softer than bronze, and hence the device on new bronze coinage is in much lower relief than the old copper coinage: it would not pay to use repeated blows and annealing in striking common coins. An impression in high relief or deep intaglio may be obtained by a single blow by the *clïché*

method. For this, a fusible alloy is used, such as type-metal, or still better, an alloy of 2 parts bismuth, 1 lead, and 1 tin, which fuses at about 212°, and becomes pasty before solidifying. The metal is poured into a box or tray a little larger than the die, and when in a pasty condition, the die is placed over it, and struck smartly with a heavy mallet or a coining-press. A steel die is by no means necessary for this; sharp impressions may be obtained from bronze medals themselves, or even from wood and plaster casts. A cliché mould may be made in the first instance from the medal, and then a cliché relief from this mould, if the process is skilfully conducted. The skill required consists mainly in striking the blow with a force proportionate to the depth of the impression and the softness of the metal, and in selecting the right moment for doing so, just as the fused metal is on the point of solidifying; for, if too fluid, it will merely be driven aside; and if at all set, an imperfect impression results. The metal should be of about the consistence of melted sealing-wax, and then the surface is set by contact with the cool die or medal, while the body of the metal still yields to the pressure. Cliché moulds are admirably adapted for electro-depositing.

DIES IRÆ, *dī'ēz ī'rē* [L. day of wrath]: a famous mediæval Latin hymn on the Last Judgment, so named from its opening words. On account of the solemn grandeur of the ideas which it brings before the mind, and the deep emotions that it is fitted to excite, it soon found its way into the liturgy of the church. The authorship of the hymn has been ascribed to Gregory the Great, St. Bernard of Clairvaux, Umbertus, and Frangipani, the last two of whom were noted as church-hymnists; but in all probability it proceeded from the pen of the Franciscan, Thomas of Celano, native of the Abruzzi, in the kingdom of Naples, who died about 1255. The date when the church adopted it, and made it a portion of the service of the mass, cannot be ascertained with exactness, but it must have been before 1385. Several alterations were then made in the text; that, however, is believed to be the original which is engraved on a marble tablet in the church of St. Francis at Mantua. Germany has produced many translations of the hymn, such as those of Schlegel, Fichte, and Bunsen. It was translated into English by Richard Cranshaw in the 17th c., and by Lord Macaulay, Lord Lindsay, the Rev. Isaac Williams of Oxford, and others in our own day. Sir Walter Scott has introduced two or three of the opening verses into his *Lay of the Last Minstrel*. The following are the most effective stanzas of the original Latin:

Dies iræ, dies illa
Solvet sæclum in favilla,
Teste David cum Sibylla.

Tuba mirum spargens sonum
Per sepulcra regionum
Coget omnes ante thronum.

Mors stupebit et natura,
Quum resurget creatura
Judicanti responsura.

Liber scriptus proferetur,
In quo totum continetur
Unde mundus judicetur.

Judex ergo cum sedebit,
Quidquid latet apparebit,
Nil inultum remanebit.

Quid sum miser tunc dicturus,
Quem patronum rogaturus,
Quum vix justus sit securus?

Rex tremendæ majestatis,
Qui salvandos salvas gratis,
Salva me, fons pietatis.

Recordare, Jesu pie,
Quod sum causa tuæ viæ:
Ne me perdas illa die.

Quærens me sedisti lassus,
Redemisti cruce passus,
Tantus labor non sit cassus.

Qui Mariam absolvisti
Et latronem exaudisti,
Mihi quoque spem dedisti.

Inter oves locum præsta,
Et ab hœdis me sequestra,
Statuens in parte dextra.
Amen.

DIESIS, *dī′ē-sĭs:* term used by the ancient Greeks, in the division of musical intervals, of which they had three varieties. In modern music the diesis is understood to be the difference between the small and the great semitone, as from C to C sharp, and from C to D flat.

DIESKAU, *dēs′kow*, LUDWIG AUGUST, Baron VON: 1701-1767, Sep. 8; b. Saxony: soldier. He received a milit. education, and after serving in the German army entered that of France, was appointed adj. to Marshal Saxe, and accompanied him on his Netherlands campaign. In 1748 he was promoted brig.gen. of inf., and appointed commander of Brest, and 1755 was sent to Canada as commander of the French troops operating against the British. At the head of a force of 200 regular troops, 600 Canadians, and as many Indians, he proceeded up Lake Champlain with the intention of attacking Fort Edward. On Sep. 8 his regulars attacked the English centre, while the Canadians and Indians were charged with the assaults on the flanks; but as soon as the English opened with their batteries his allies became panic-stricken and fled. He received three wounds before ordering the retreat, and while resting against a tree entirely alone received a fourth in his hip, and was taken prisoner. On his liberation and return to France, he was pensioned by the government.

DIES NON, *dī′ēz nŏn* [L. day not]: in *law*, a non-business day, that is such days as Sunday, and legally appointed holidays.

DIET, n. *dī′ĕt* [F. *diète*, diet, daily fare—from mid. L. *diæta;* Gr. *diaita*, mode or place of life, means of life, a dwelling for living in. It. *dieta;* Gael. *diot*, a meal: see DIET 2 (Note)]: food or victuals; allowance of provision; food regulated by medical advice: V. to furnish food; to eat according to prescribed rules. DIETING, imp. *dī′ĕt-ĭng:* N. the act of eating according to prescribed rules. DI′ETED, pp. DI′ETER, n. one who prescribes rules for eating. DI′ETARY, n. *-ĕ-tĕr-ĭ*, course or order of diet; allowance of food in a public institution, a prison, etc.—For *military dietary*, see BAKERIES, ARMY: COMMISSARIAT: COOKERY, ARMY: RATION.—*Naval Dietary*, in Great Britain, as arranged in fitting out naval vessels, is calculated on two data—the established allowance or ration of certain articles and the average experience of past years regarding certain other articles. Under the first category the ration is everywhere equal, from the admiral down to the humblest sailor; under the second, the differences are very wide.—ADJ. relating to diet. DI′ETET′IC, a. *-tĕt′ĭk*, or DI′ETET′ICAL, a. *-ĭ-kăl*, pertaining to rules for the proper use of food. DI′ETET′ICS, n. plu. *-ĭks*, rules for diet, treating on the quantity and quality of particular kinds of food suited to the digestive organs; the science or philosophy of diets. DI′ETET′ICALLY, ad. *-lĭ*.

As to diet man and animals generally require that their food should be of such a nature and quantity as to compensate for the continual waste of the tissues and at the same time to keep the animal heat up to its proper standard. No classification of food is very satisfactory although several have been suggested. In general we may adopt Liebig's classification of foods and divide them into *carbonaceous*, or those which furnish heat, and *nitrogenous* or those whose function it is to build up the body and furnish muscular energy. Dr. Prout some years ago divided the foods according to their different chemical properties, into: (1) *aqueous*, (2) *saccharine*, (3) *oleaginous*, (4) *albuminous*. To these should be added; (5) *gelatinous*, and (6) *saline*.

In considering the subject we are met at the outset by the fact that a large number of foods not only furnish heat and build up the body, but also furnish muscular energy. The *cells* of the body may draw their supply of energy from proteids, albuminoids, carbohydrates or fats, but material for the manufacture and repair of tissues must come from the proteids. Heat is produced as a result, or as a 'by-product' of cell action. In order to find out what the body needs for its sustenance we may either study the composition of the body, or we may study milk, which is the food provided by nature to nourish the young. Milk is made up of substances which may be taken as representatives of the different groups of food, suggested by Prout. It contains water, sugar, fat, casein, and mineral salts. If we consider each one of these groups, the aqueous group would include water and other fluids which are used as

drink, but large quantities of water are taken into the system in all animal and vegetable food. Uncooked beef contains 70 to 80 per cent. of water, potatoes 75 per cent. of water. Since it is estimated that the body of a man weighing 154 pounds would contain 109 pounds of water it is evident that this important fluid will be required in large quantities.

In the sugar group may be included different varieties of sugar, starch, gum and cellulose. Here are associated the elements carbon, hydrogen, and oxygen. The oxygen and hydrogen are present in proportion to form water; that is two parts of hydrogen to one of oxygen, as starch $(C_6H_{10}O_5)_n$, cane sugar $(C_{12}H_{22}O_{11})$. The substances in this group are usually called the carbohydrate foods. The bodies of the glucose group (grape sugar $C_6H_{12}O_6$) including dextrose, lævulose, grape sugar, starch sugar, etc., are of great importance, not only because they so frequently occur in articles of food such as fruits and honey, but because they include the sugars which are formed from the starch of the food. When this material is acted upon by saliva, pancreatic and intestinal juices in the process of digestion, the sugars will evidently be oxidized to carbon dioxide (CO_2) and water (H_2O) as ultimate products. They must therefore materially contribute to the support of animal heat. (See DIGESTION.) Sometimes in the process of oxidation such substances as lactic and acetic acids are produced and these may be of use in the process of digestion. These acids also by acidifying the albuminous intestine contents increase their diffusibility through the intestinal membranes into the lacteals and probably into the capillaries. This may help us to explain the therapeutic use of acids in various disorders of the alimentary canal. The other carbohydrates of this group are of little importance. It is by many supposed that the gums pass through the system unchanged. Dr. Hammond found from experiments upon himself, first, that gum is altogether incapable of assimulation, and therefore possesses no nutritive power whatever, but is, on the contrary, a source of irritation to the digestive organs; second, that in consequence of the above fact the solids of the urine, during a purely gum and water diet, are entirely derived from the waste of the tissues of the body, while the carbon given off as carbon dioxide from the lungs is derived from the consumption of the fat.

Cellulose $(C_6H_{10}O_5)_n$, although capable of being digested to some extent by some of the lower animals, is practically not available for nutrition of man. According to Atwater some of the cellulose of the food is absorbed, but much of it passes through the system unchanged, and is of value only as it helps to distend the alimentary canal. Whatever digestion of cellulose takes place in the intestines is supposed to be due to the action of certain micro-organisms, by which fatty acids are produced, which upon absorption yield nutriment. The herbivorous animals eat food that

contains large amounts of cellulose associated with smaller quantities of starch, fat and nitrogenous substances.

In the fatty group may be included all fats and oils from both vegetable and animal sources. Like starch and sugar the fats do not directly form muscular tissue, but they have two and one-quarter times the power to maintain the heat and activity of the body that the carbohydrates possess. Fats may be briefly described as consisting of the ethers, of the triatomic alcohol radicle containing glycyl (C_3H_5). When the fats are treated with alkalies or by high pressure steam they are broken into glycyl alcohol (glycerin) and stearic or some other fatty acid. As far as nutritive qualities are concerned there seems to be little difference whether the fat comes from a vegetable or animal source. Some of the vegetable products yielding fat are: almonds 54 per cent., peanuts 41. 6 per cent., cacao 44 per cent., flax seed 38 per cent., cotton seed 20 per cent., oatmeal 6 per cent., Indian corn 4.2 per cent., peas 2.5 per cent., wheat flour 1 per cent. The animal sources are: butter 84.4 per cent., bacon 65 per cent., cheese 30 per cent., poultry 16.3 per cent., mackerel 13 per cent., eggs, whole, 11 per cent., cow's milk 4 per cent.

When fat is deposited in the body beneath the skin it keeps up the warmth of the body. The fat is mainly absorbed by the lacteals though a portion of it passes directly into the capillaries of the villi as has been shown by microscopic examination, which has revealed the presence of fat-granules among the blood corpuscles. The uses of fat in the system are various. By their oxidation, either slow or rapid, a large amount of heat results. They ultimately oxidize into carbon dioxide and water. This is evident because they neither appear in any quantity in the excretion nor accumulate beyond a certain point in the organisms.

It has been noticed in artificial digestion that the presence of a little fat accelerates the solution of nitrogenous matter taken as food. Since fat occurs in milk, in the egg and in all highly cellular organs it is evident that this substance plays an important part in the process of cell formation.

In the albuminous group are contained the so-called protein bodies. This includes, first, proteids, which contain nitrogen, oxygen, hydrogen, carbon, and sulphur, and are capable of being converted in the body into proteoses and peptones. They are found in both animal and vegetable food. Under this head the following division among others may be made: albumen which occurs in eggs, milk, cereals, etc., globulin which occurs in serum, in blood, as myosin in meat, as vitellin in egg-yolk and as vegetable vitellin in cereals, peas, beans, etc.; albuminates occurring in casein of milk, in peas, beans and almonds; proteoses which occurs in sour milk, ripened cheese and wheat flour, and peptones which are found in meat. Second, albuminoids. These are much like the proteids

and include important substances as collagen, which composes the fibers of connective tissues; gelatin, which is made by boiling bones; mucin, which is found in meat and also in mucus; nuclein, which occurs in the nuclei of cells in the egg-yolk and milk; chondrin, a substance that may be obtained from cartilage by long boiling, and elastin, which forms the elastic fibers of connective tissue.

In discussing the proteids Yeo says: 'The function of the albuminous substances is probably threefold, as they contribute to the formation and repair of the tissues and fluids of the body, and in a special manner of the nitrogenous tissues; they regulate the absorption and utilization of oxygen, and so play an important part in the chemistry of nutrition; and under special conditions they may also contribute to the formation of fat, and to the development of muscular and nervous energy, and to the production of heat.'

It is evident when we consider the composition of milk and of eggs that all the nitrogenous tissues of the body of the young animals must have been derived from the albumin or casein, or some modifications of these substances. It seems to be also pretty well established that these substances are throughout life the essential producers of the blood, and consequently of the various nitrogenous substances which are built up from that fluid.

The gelatinous group, above mentioned, includes the different varieties of gluten, obtained by boiling, from many animal tissues, as, bone cartilage, tendons, skin, hoofs, etc. These gelatin substances are of course an important constituent of soups and jellies which stiffen on cooling. Many of these have formerly been regarded as highly nutritious. Beef extract contains considerable gelatin but it frequently lacks nutritive constituents, and probably acts more as a stimulant and substance to arouse the appetite for foods than as a true food.

In the saline group have been included the mineral salts, which are taken into the system in various ways, in the food, in water, milk and other beverages. Among the mineral substances that must be furnished to the body may be mentioned calcium phosphate and carbonate, and sodium chlorid (common salt). There is little danger, except in some special physical conditions, that a sufficient quantity of mineral salts will not be taken into the system. As these mineral salts are continually given out through various secretions it is evident that they must be as continuously supplied by the food. The trouble usually is not an absence of the mineral salts in the food, but lack of ability to appropriate them into the system.

In order to supply the wants of the system, food must consist of a combination of the above mentioned groups. Animals fed exclusively on food of one class do not thrive. As in the infant's food all these different kinds of food are represented, so at other periods of life the food taken must contain a considerable portion of the substances of each

one of these groups. The nutritive quality of foods cannot always be predicted by the analysis, but the digestibility must also be considered. An opportunity to study digestion within the body was presented years ago in the very familiar case of St. Martin, a Canadian, in whom there was, in consequence of a gun-shot wound, a fistulous opening leading from the exterior to the interior of the stomach. It should be remembered, however, that the conditions that are favorable to digestion in one case might not be to a person of different temperament and habits. (See ALIMENTARY CANAL.) Most elaborate experiments have been carried on by Professor Atwater and others to ascertain the real value of different foods, the heat producing power, in terms of calories. (See CALORIES.) Both daily experience and chemico-physiological observation show that food best adapted to the system ordinarily contains not only fat and carbohydrates, but also albuminous substances. We instinctively use starchy foods with fats, as for example, bread with butter, and beans with fat pork.

Indeed if we refer again to the composition of milk and eggs we see that both these foods contain a combination of different classes of foods. Although the study of milk may give us a general idea as to the proportion in which the different nutritive groups may be combined to conform to the wants of the organism, yet this cannot be taken as complete evidence for adults under ordinary conditions of living. The absolute quantity of food required for the maintenance of the body in health varies with the age, sex, and habits of the individual, and with other various circumstances.

There are two methods of establishing dietaries. One is by the study of food consumption by a class of people or individuals when they have a free choice of food, and the other contemplates the feeding to a class of individuals or to selected persons, certain foods of known weight and composition, and studying the nutritive value as it is called; or the amount of nutrition taken into the body daily in the food, and the amount excreted. Some standard Dietaries have been compiled by Professor Atwater (*Foods, Nutritive Value and Cost*, Farmers' Bul. 22, U. S. Dept. Agric.: Bul. 28, U. S. Dept. Agric. Office Exp. Sta.), and represent what is believed to be a sufficient quantity or the amount needed by persons with different degrees of labor. Professor Atwater estimates that a man at moderate work would require per day, 25 gms. of protein, 125 gms. of fat, 450 gms. of carbohydrates, and these would have a fuel value of 3,520 calories, while a man at hard work should have 150 gms. of protein, 150 gms. fat, 500 gms. carbohydrates, altogether having a fuel value 4,060. The daily amount of solid food consumed by an adult male is 50 to 60 ounces with about the same quantity of water. In case of severe labor the amount would be increased to from 70 to 75 ounces, the addition being mostly

in fats and carbohydrates. Other authors would give an ideal daily ration of solid food as containing 107 gms. of proteids, 58 gms. fat, 390 gms. carbohydrates, and yielding altogether 2,574 calories.

For methods of cooking meats, also boiling and broiling see FOOD AND DRINKS. General References: See *Food and the Principles of Dietetics*, Robt. Hutchinson (1900); *Practical Dietetics*, W. Gillman Thompson (1902); *Studies in Physiological Chemistry*, Chittendon; *Food and Dieting*, Richards; *Air, Water and Food*, Richards and Woodman; *Hygiene for Students*, Willoughby.

DIET, n. *dī'ĕt* [F. *diète*, a diet, daily fare, an assembly—from mid. L. *diœta*, a ration of food: L. *dĭēs*, a day: OE., *day* or *diet*, an appointed day for hearing a cause or for the meeting of an assembly]: a deliberative assembly formerly held in Germany and Poland, and now in the Austrian empire and Switzerland; a parliament: in *Scot.*, a meeting in a church for divine worship.—The Diet of the German States was a body of great antiquity, not representative but feudal: when feudalism passed away, it became a congress of the princes, gradually declined in importance, and finally dissolved. DI'ETINE, n. *-tĭn*, a subordinate or local diet. *Note.*—DIET means properly the mode of life prescribed by a physician; then, the way or mode of life; and finally a place of entertainment, a dwelling. It has been judged better to give separate entries for *diet*, food—and *diet*, an assembly, though etymologically one word. By the latter entry there appear to be two lines of origin; but the connection with *dies* is really a popular etymology, and an obvious accommodation.

DIET, DESERTION OF, in Scottish Law: abandonment of a criminal libel by the public prosecutor—the proceedings under such a libel being spoken of technically as a diet.

DIETERICHS, *dē'tė-rĭchs*, JOACHIM FREDERICK CHRISTIAN: veterinary surgeon; b. 1792, Mar. 1; at Stendal, in Prussia. In 1818, he undertook, for the Prussian government, a tour through France, Würtemberg, Bavaria, Austria, and Hungary. On his return, he was appointed to a chair in the Veterinary College of Berlin, which he held for four years. In 1830, he accepted a post in the General Military School of Berlin, where, 1841, he was appointed prof. in ordinary. His publications, widely known, and translated from the German into various languages, include *Pulmonary Consumption in Cattle* (Berlin, 1821); *Manual of Veterinary Surgery* (1822); *Manual of Special Pathology and Therapeutics for the Use of Veterinary Surgeons* (1828); *Manual of the Practical Knowledge of Horses* (1834); *Manual of Obstetrics* (1845); *Manual of the Education of Domestic Animals* (1848); *The Principal Defects of Horses, and the Mode of Diagnosing them* (1853).

DIETHERESCOPE, n. *dī-ēth'ėr-ĕ-skōp* [Gr. *dia*, through; *aithēr*, ether, the upper, purer air; or *diaithros*,

quite clear and fine; *skopeō*, I look at]: instrument for geodesy and for teaching optics, invented by G. Luvini, of Tunis (1876).

DIETRICH, *dēt'rĭch*, Christian Wilhelm Ernst, German painter; b. Weimar, 1712, Oct. 30; d. Dresden, 1774, April 24. The picture of a peasant drinking, in the Dutch style, executed by Dietrich, while a boy, is in the Royal Cabinet of Engravings at Dresden. He successfully imitated Raphael and Mieris, Correggio and Ostade. His paintings are scattered through almost all Europe. In the Dresden gallery, of which he was inspector, there are 34 of them.

DIETRICH OF BERN, *dē'trĭch:* name under which the Ostrogoth king, Theodoric (q v.) the Great, appears in the German heroic legends; in which by Bern, his capital, Verona, is to be understood. As early as the 7th c., he seems to have become the centre of a distinct cycle of legends. A little later, he was, with the usual legendary disregard of all historical truth, brought into connection with the traditions of Attila, or Etzel. According to these legends, D. is said to have fled from Italy before Ottacher (Odoacer) or Ermanarich; and with his attendant vassals, to have met a hospitable reception from Etzel; but after many years, to have again got possession of his kingdom. The extermination of the royal House of Burgundy by Attila, which is an historical event, was the cause that D., as well as Etzel himself, was woven into the Burgundian and Frankish Siegfriedssage; and thus he appears, in the second part of the *Nibelungen*, at Etzel's court, and is handled by the poet with special predilection. There have been numerous poems, besides, of which D. was the centre and principal hero. It is very probable that the *Hildebrandslied*, of the 8th c., is the fragment of such a poem. Except this, we have only late versions of these legends; for example, *Schlacht vor Raben* (Ravenna) of the 13th c., *Alphart's Tod* (13th c.), *Zwerg Laurin, oder der kleine Rosengarten* (15th c.), *Dietrich's Ahnen, Dietrich's Flucht*, etc.

DIETRICHSON, *dē'trĭk-sŏn*, Lorents Henrik Segelcke, Norwegian poet and historian of art and literature; b. Bergen, 1834, Jan. 1. While an undergraduate in the University of Christiania, he composed many clever student songs which were collected and published in 1859. He published the poem *Olaf Liliekrans* in 1857, and *Kivleslåtten* in 1879. His writings are numerous and among them are: *Didactic Poetry in the North* (1860); *The Art of Wood Sculpture in Norway* (1879).

DIETS OF COMPEAR'ANCE, in the Law of Scotland: the day on which a party to a civil or criminal process is cited to appear in court: see Summons: Indictment: Inducіæ.

DIEU, n. *dē-ė* [F]: God.

DIEU ET MON DROIT, *dē-ė ā mŏng drwa* [F.]: God

and my right; the motto of the royal arms of England, first adopted by Richard I. who flung this battle-cry at his French adversaries during the engagement at Gisors, 1195, to intimate that he did not hold his empire in vassalvage of any mortal. It was revived by Edward III. in 1340, when he claimed the crown of France. Except during the reigns of Elizabeth and Anne, who used the motto, *Semper eadem*, and of William III., who used *Je maintiendray* as his own motto (*Dieu et mon droit* being retained on the great seal), it has ever since been the royal motto of England.

DIEZ, *dēts*, FRIEDRICH CHRISTIAN: 1794, Mar. 15—1876, May 29; b. Giessen: founder of the philology of the Romanic languages. He was educated at Giessen and Göttingen. In 1819–20 he lived at Utrecht as a domestic tutor; in 1822, went to Bonn as a *privat-docent*, and in 1830 was there appointed prof. of modern literature. His first work, *Altspan. Romanzen*, was issued 1821. He published a great number of valuable works on the Romanic languages, two of which are worthy of special mention—the *Grammatik de Romanischen Sprachen* (Grammar of the Romanic Lanuages, 3 vols. Bonn 1836–42), and the *Etymologisches Wörterbuch der Romanischen Sprachen* (Etymological Dictionary of the Romanic Languages, Bonn 1853). The last of these works, in particular, is recognized as the basis for the scientific study of all the Romanic languages.

DIF, *dĭf:* another form of the prefix DIS, which see.

DIFFARREATION, n. *dĭf-făr-rē-ā'shŭn* [*diffarreatio*—from *dis*, apart; *farreum*, a cake made of spelt]: in *Rom. antiq.*, the breaking of a cake between man and wife, as a sign of divorce. The opposite of confarreation (q. v.).

DIFFER, v. *dĭf'fėr* [F. *différer*—from L. *differrĕ*, to carry different ways—from *dis*, asunder; *fero*, I bear or carry: It. *differire*—*lit.*, to carry different ways]: to disagree; to be at variance; to be unlike; to quarrel. DIF'FERING, imp. DIF'FERED, pp. *-fėrd*. DIF'FERENCE, n. *-ĕns* [F. *différence*—from L. *differentĭă*]: want of similarity; distinction; that which distinguishes one from another; variation total or partial; contention; quarrel; the point in dispute; the remainder after subtraction. DIFFERENCE ENGINE; see CALCULATING MACHINE. DIFFERENCES, CALCULUS OF FINITE: see DIFFERENCES.—DIF'FERENT, a. *-ĕnt* [F.—L.]: unlike; dissimilar. DIF'FERENTLY, ad. *-lĭ*. DIF'FEREN'TIAL, a. *-ĕn'shăl*, relating to or indicating difference; pertaining to an infinitely small variable quantity or difference, which is called a *differential quantity;* in *commerce*, creating a difference; special, as *differential duties;* in *mech.*, differing in amount, or in the producing force; intended to produce or indicate difference of motion or effect: N. the infinite small variation of a quantity. DIF'FERENTIALLY, ad. *-lĭ*. DIFFERENTIAL CALCULUS, that part of mathematics which treats of the rates of change of variable quantities

(see CALCULUS). DIFFERENTIAL WORM-WHEEL, a cog-wheel working with a screw on a shaft. DIF′FEREN′TIATE, v. *-shĭ-āt*, to perform the operation of the differential calculus; to effect a difference as a point of classification; to exhibit clearly different shades or degrees, as of signification; to change from one degree or quality into another; in a diagnosis, to separate one disease from another by pointing out the difference. DIF′FEREN′TIATING, imp. DIF′FEREN′TIATED, pp. DIF′FERENTIA′TION, n. *-ā′shŭn*, specialization; the clear and distinct exhibition of different shades or degrees, as of signification; in *math.*, process of finding the differential of a function; in *biology*, that organic process which occurs when certain parts of a uniform whole become structurally different from the others, or when, in other words, the homogeneous becomes heterogeneous. Inequality in internal and external conditions of life brings about restriction of certain vital processes and the predominance of others; and as this division of function is established, diversity of structure results. Differentiation is the structural change associated with the physiological 'division of labor' and the process is essentially the same in cells, tissues, organs, or entire organisms. DIFFERENTIAL EQUATION. See CALCULUS. DIFFERENTIAL GALVANOMETER, a. galvanometer with two coils of wire in which currents pass in opposite directions. DIFFERENTIAL THERMOMETER, an instr. for showing the difference in temperature between two neighboring places: see THERMOMETER.—SYN. of 'differ': to vary; contend; wrangle; oppose; dispute; dissent;—of 'difference': variety; variation; contrast; diversity; contrariety; disagreement; dissimilarity; dissimilitude; variance; contest; dispute; controversy; debate; wrangle; strife; discordance; dissension.

DIFFERENCES, CALCULUS OF FINITE: method in higher mathematics. When we have a series of numbers connected by a regular, though not obvious law, the character of that law may be detected by forming a new series of the *differences* between each term of the original series and the next, and then treating the new series (which we may call the series of 'first differences') in the same way; and so on, till we reach a series of differences the law of which is manifest. Thus,

Given series,	4, 7, 11, 18, 31, 54, 92, 151
First differences,	3, 4, 7, 13, 23, 38, 59
Second differences,	1, 3, 6, 10, 15, 21
Third differences.	2, 3, 4, 5, 6,

The law of the series of third differences is manifest; we see that its next term must be 7, which gives 28 as the next term of the series of second differences, 87 as the next of the first differences, and so 238 for that of the original series, which we can thus continue to any number of terms. To take a simpler case. Let the series be

	43, 47, 53, 61, 71
First differences,	4, 6, 8, 10
Second differences,	2, 2, 2

Here the law is manifest in the first differences, and we should be able to calculate the series if we knew the first terms of the three series: viz., 43, 4, 2. It is on this principle that calculating machines (q.v.) can be constructed to compute tables of logarithms, etc. Out of this comparatively simple method of Differences sprang the Calculus of Finite Differences, first treated by Dr. Brook Taylor, under the name of the Method of Increments. This calculus deals with the changes of functions when *finite* increments are made to the variables; while the ordinary Calculus consider their changes when the variables change continuously.

DIFFIBULATE, v. *dĭf-fĭb′ū-lāt* [L. *dis*, away, apart; *fibulo*, I fasten with a buckle; *fibula*, a buckle]: to unbuckle; to unbutton.

DIFFICULT, a. *dĭf′fĭ-kŭlt* [F. *difficulté*, difficulty—from L. *diff′ĭcultātem*, difficulty, trouble—from L. *difficĭlis*, hard, difficult—from *dis*, *facĭlĭs*, easy to be made or done]: not easy to be done: hard of accomplishment; attended with labor; arduous; laborious. DIF′FICULTY, n. *-kŭl-tĭ*, that which is hard to be done; an obstacle; perplexity; distress. DIF′FICULTIES, n. plu. *-tĭz*, embarrassment of affairs, chiefly in money affairs.—SYN. of 'difficult': hard; perplexed; austere; rigid; crabbed; unaccommodating; incredulous;—of 'difficulty': impediment; objection; cavil; embarrassment; obstruction; exigency; trouble; distress; trial; controversy; variance; disagreement.

DIFFIDENCE, n. *dĭf′fĭ-dĕns* [L. *diffīdens* or *diffiden′tem*, distrusting—from *dis*, *fīdo*, I trust: It. *diffidenza*]: want of confidence; distrust of one's self; modest reserve. DIF′FIDENT, a. *-dĕnt*, distrustful of one's own power or ability; modest; timid. DIF′FIDENTLY, ad. *-lĭ*.—SYN. of 'diffidence': distrust; misgiving; humility; bashfulness; doubt; timidity; fear; hesitation; apprehension; modesty;—of 'diffident': bashful; distrustful; hesitating; doubtful.

DIFFINITIVE, a. *dĭf-fĭn′ĭ-tĭv* [F. *définitif*—from mid. L. *diffĭnitīvus*—from *dis*, *finītus*, limited, bounded]: final; conclusive.

DIFFLUENT, n. *dĭf-flû-ĕnt* [L. *difflŭĕns*, dissolving—from *dis*, asunder; *flŭō*, I flow]: in *bot.*, dissolving; having the power to dissolve.

DIFFLUGIA, n. *dĭf-flō′jĭ-a* [L. *diffluo*, I flow in different directions—from *dis*, apart; *fluo*, I flow]: genus of rhizopods, family *Arcellina*. They are aquatic, and are contained in a spherical or oblong urceolate incrusted case.

DIFFRACT, v. *dĭf-frăkt′* [L. *diffractus*, broken in pieces—from *dis*, apart; *fractŭs*, broken]: to break or separate into parts, as light: ADJ. in *bot.*, broken into distinct areolæ separated by chinks. DIFFRAC′TING, imp. DIFFRAC′TED, pp. DIFFRAC′TION, n. *-frăk′shŭn* [F.—L.]: in *optics*, the turning aside or breaking up of rays of light which pass very near the boundaries of an opaque body. DIFFRACTION GRATING, a small plate ruled with very fine close

lines, by which the rays of light are broken up, and the colors of the spectrum produced.

DIFFRAC'TION, or INFLEC'TION, of the Rays of Light: breaking up or turning aside of the rays It was observed by Grimaldi, that if a beam of the sun's light be let into a dark room through a very small hole, the shadows of things in this light will be larger than they ought to be if the rays passed by the bodies in straight lines, and that these shadows have three parallel fringes, bands, or ranks of colored light adjacent to them. This phenomenon was known originally under the name of diffraction, and was supposed to arise from the refraction of the atmosphere. This explanation was disproved by the observations of Newton, who, from the conception which he was led to form of it, called the phenomenon the 'inflection of the rays of light.' It is now identified with a larger class of phenomena, much more completely explained in the later development of the theory of light, and assigned, on the hypotheses of Fresnel, to the interference of undulations: see INTERFERENCE. The observations and experiments of Newton on the subject, as detailed in the third book of his work on Optics, are, however, extremely interesting and instructive, and for accurate observation and description, apart from the imperfect state of the theory, leave nothing to be desired. Having made in a piece of lead a small hole with a pin, whose breadth was the 42d part of an inch, Newton let into the darkened chamber a beam of the sun's light. In this light, the shadows of all bodies were bordered with three parallel fringes or bands of colored light. The shadow of a hair, too, was found to be much broader than the hair itself, and fringes of light were observed within it.

Again admitting light into the darkened apartment by a hole a quarter of an inch wide, he allowed it to pass between two knife-edges parallel to one another. In this case, owing to the breadth of the hole by which the light was admitted, the fringes did not appear within the shadows of the knives until the knife-edges were brought to approach one another, when they appeared. By making the hole smaller through which the light was admitted, they became more distinct. 'As the knife-edges continually approached one another, the fringes grew distincter and larger, until they vanished. The outmost fringe vanished first, the middlemost next, the innermost last; and after they all were vanished, and the line of light in the middle between them was grown very broad, a shadow began to appear in the middle of this line, and divide it along the middle into two lines of light, and increased until the whole light vanished. This enlargement of the fringes was so great, that the rays which go to the innermost fringe seemed to be bent above 20 times more when this fringe was ready to vanish, than when one of the knives was taken away.'

The order of these phenomena is then made clear by the following experiment: 'I caused the edges of two knives to be ground truly straight, and pricking their points into a

board, so that their edges might look towards one another; and meeting near their points, contain a rectilineal angle, I fastened their handles together with pitch, to make this angle invariable. The distance of the edges of the knives from one another at the distance of four inches from the angular point, where the edges of the knives met, was the eighth of an inch; and therefore the angle contained by the edges was about 1° 54′. The knives thus fixed together I placed in a beam of the sun's light, let into my darkened chamber through a hole the 42d part of an inch wide, at the distance of 10 or 15 ft. from the hole.' When the

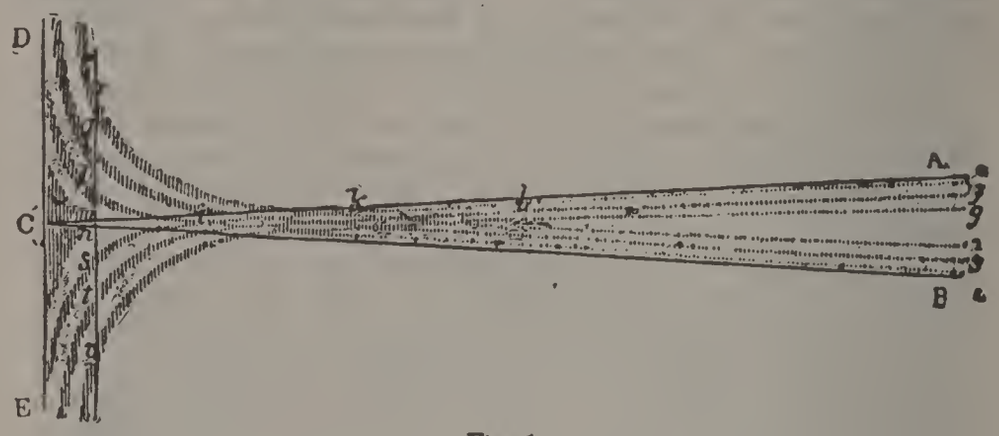


Fig. 1.

fringes of the shadows of the knives fell perpendicularly upon a paper at a great distance from the knives, they were in the form of hyperbolas, and are represented in the following figure.

In the diagram, CA, CB, are lines drawn upon the paper parallel to the edges of the knives, and between which all the light would fall, if it passed between the edges of the knives without inflection. The lines *eis*, *fkt*, and *qlv*, represent the terminus of the shadow of one of the knives, the dark line between the first and second fringes of that shadow, and the dark line between the second and third fringes of the same shadow. The lines *xip*, *ykq*, and

Fig. 2.

zlr, represent the same lines corresponding to the other knife-edge. These lines are hyperbolas, having for asymptotes the line DE, and lines parallel to CA, CB, respectively.

It will be seen that in this experiment the fringes become wider toward the narrow end of the opening, just

as in the former case they become wider as the knife-edges approach one another.

The best mode for exhibiting the phenomena of diffraction, and that now generally adopted, is as follows: The rays of sunlight being reflected horizontally through an aperture into a darkened apartment, are concentrated by a combination of lenses to a very small focus. Thus the light is made to diverge from a very small circle, with the advantage of a greater concentration of light than is obtained by simply admitting the sunlight through a small aperture. The edges of the shadows of every object placed within the cone of light diverging from this focus, will exhibit the fringes above described.

By means of metal-leaf arranged upon a plate of glass, as in the accompanying diagram (fig. 2) shadows can now

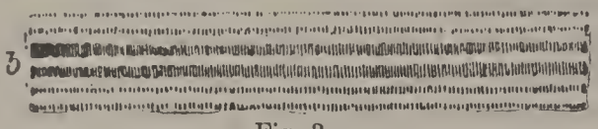


Fig. 3.

be thrown upon a screen, so as to exhibit at once all the most peculiar phenomena of this class.

The figures *b*, *c*, in the accompanying diagram (figs. 3 and 4) represent the appearance presented by the shadow of a wire and of a small circular disc.

The following is a popular explanation of the phenomenon above described, as now understood. Supposing light to be propagated by undulations proceeding from a single small source or focus at A (fig. 5): let B*b* be a section of the front of a wave of this light, that is, a section of a surface passing through all the particles which are at the same instant in the same place of vibration. Let C*c* represent the front of the same wave when it has passed through the additional space BC. The vibrations of the particles in C*c* are the consequence of the vibrations previously existing along the space B*b*. But then, the motion of the particle at C is determined not alone by the previous motion of the point B, immediately opposite to it, but is affected more or less by the motions of every point in the surface B*b*. If, therefore, the vibrations over a portion of the space B*b*, be intercepted by a dark object *de*, placed there, the circumstances which determine the motion of the point C, may be totally changed; and taking into account the united

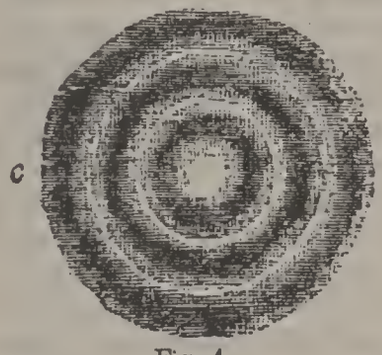


Fig. 4.

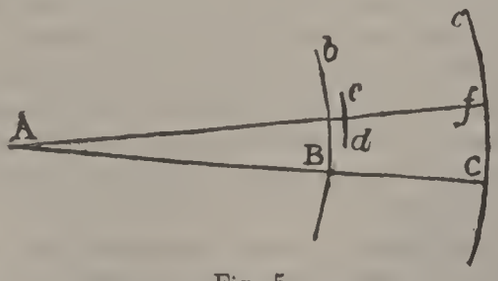


Fig. 5.

effect of these vibrations, it may be found that the result, instead of light, will be darkness. Again, if a point *f* be taken directly behind the dark body *de*, though the vibrations over the space *de*, which would otherwise affect it, are stopped, it may still be affected by the vibrations in the remainder of the surface B*b*; and if the combined effects of these be such as to cause in it a sufficient vibration, there will be light at the point *f*, though it is properly within the shadow of *ed*. On the assumption of Fresnel, the explanation of all the phenomena above described is most complete and satisfactory, the fringes and dark lines being produced by the undulations alternately strengthening or destroying each other. A very beautiful experiment, devised by Fresnel for the purpose, is found to furnish a complete verification of the theory. See INTERFERENCE.

DIFFUSE, v. *dĭf-fūz′* [F. *diffus*—from L. *diffūsus*, spread abroad—from *dis*, *fūsus*, poured or spread: It. *diffuso*]: to cause to flow and spread; to send out in all directions; to circulate; to intermix uniformly and spontaneously, as one liquid with another. DIFFU′SING, imp. *-fū′zĭng*. DIFFUSED′, pp. *-fūzd′*: ADJ. dispersed; scattered. DIFFUSE, a. *dĭf-fūs′*, using too many words; not concise; widely spread; spreading irregularly. DIFFUSE′LY, ad. *-fūs′lĭ*. DIFFUSE′NESS, n. *-fūs′nĕs*, the quality of being diffuse; the use of a great number of words to express the meaning. DIFFU′SIBLE, a. *-zĭ-bl*, that may be spread out or scattered. DIFFU′SIBIL′ITY, n. *-zĭ-bĭl′ĭ-tĭ*, capability of being spread. DIFFU′SION, *-fū′zhŭn* [F.—L.]: a spreading or scattering; dispersion; propagation; in *chem.*, the act or state of becoming uniformly mixed. DIFFU′SEDLY, ad. *-zĕd-lĭ*. DIFFUSED′NESS, n. *-zĕd-nĕs*. DIFFU′SIVE, a. *-fū′sĭv*, having the quality of spreading abroad; spread widely. DIFFU′SIVELY, ad. *-fū′sĭv-lĭ*. DIFFU′SIVENESS, n. *-fū′sĭv-nĕs*, the state or quality of being diffuse; expansion; prolixity.—SYN. of 'diffuse, v.': to scatter; disperse; expand; propagate; spread; extend; proclaim; publish; pour out; disseminate; spend; waste;—of 'diffuse, a.': prolix; copious; verbose.

DIFFUSION: in physics, is the gradual and spontaneous molecular mixing of two fluids in contact. It takes place regardless of or in opposition to gravitation, and is due to the mutual attraction of molecules. It is of the greatest importance in terrestrial physics, being the cause of the uniform composition of the atmosphere at all elevations, and one of the causes of the speedy dissipation of noxious gases and vapors in the open air, and of the nearly uniform saltness of the sea, etc., so necessary to animal and vegetable life.

Diffusion is most common between gases, and the lighter the gas the faster does diffusion take place. A common experiment for exhibiting the diffusion of gases is to place in contact vessels of hydrogen and oxygen. After a time it is found that the contents of both vessels are alike—a homogeneous mixture of the two gases: and that each gas

is uniformly diffused through the whole containing space, precisely as it would have been had the other not been present. The pressure of the mixture is the sum of the pressures corresponding to each of the gases, if separately occupying the space which they jointly fill; and the same is true of a mixture in any proportions of any number of gases, so long, at all events, as they do not act chemically upon each other. If the heavier gas is placed below the lighter, the result is the same, demonstrating the fact that gravity does not check the result. If chlorine is one of the gases used, its color will enable the eye to follow the diffusion. If a porous body is placed between the vessels, the rate of diffusion can be measured. This fact is taken advantage of in the construction of the diffusiometer, invented by Thomas Graham. This consists essentially of a tube containing a gas, the lower and open end of the tube being dipped in mercury, while the upper end is closed with a porous plug. The rise of the mercury in the tube serves to measure the diffusion of the gas through the plug. Another method of testing diffusion is to fill a diffusion-tube with hydrogen and immerse the lower and open end in water, while the upper end is closed with the porous plug. Diffusion then takes place both ways, into the water and into the air. See also KINETIC THEORY. Diffusion also takes place between vapors. If, for instance, a few drops of ether be injected into an exhausted receiver, there will be an almost instantaneous conversion of a definite quantity into vapor, so that its tension shall have a certain value depending on the temperature alone. If air be present in any quantity whatever, the vaporization will proceed more slowly, but the final amount converted into vapor will be the same as in the former case. Alcohol and water afford one of the readiest means of testing the diffusion of liquids. They will diffuse the same as gases, regardless of gravity. Stirring the two hastens the diffusion, because it brings a larger surface of one liquid against the other. At the same time the action is not a mixing in the ordinary sense, but a mixing of the molecules, forming a liquid that is of like proportions throughout when the diffusion is complete. If water in a glass vessel be colored with a few drops of litmus solution, and sulphuric acid be introduced through a tube to the bottom of the vessel, care being taken not to disturb the water, the diffusion may be observed visually. The water, which is blued by the litmus, turns from blue to red as the diffusion of the sulphuric acid progresses. Some manufacturers of sugar have used the principle of diffusion for extracting cane-juice, and also for making an extract from beet-root. Hot water is applied to the cut cane, and diffusion withdraws a large part of the juice, securing the sugar. Surgeons have also utilized diffusion to cause a liquid to pass through a membrane or tissue of the body. See OSMOSE. It is the principle of diffusion of liquids that enables the druggist to compound the several items of a prescription. The

uniform strength of his solutions and extracts is also largely dependent upon diffusion. If it were not for this, several fluids in a vessel would tend to arrange themselves in layers according to gravity, as is the case with water and oil, which do not diffuse together. Substances in solution also diffuse. For instance, if a strong saline solution be placed in the bottom of a glass jar, pure water may be carefully introduced above it, so that no immediate mixture takes place. If the whole be allowed to stand, the salt is gradually diffused through the vessel, which, after a sufficient time, will be found to contain a brine of uniform strength. The diffusion of substances in solution follows Fournier's law of the diffusion of heat. See HEAT. As the temperature rises the rate of diffusion increases. Since the rate of diffusion of different solutions and liquids varies, it becomes possible to separate component substances in solution by taking advantage of the difference in rate of diffusion of each component. It has been demonstrated that some solids diffuse, though with extreme slowness. Lead placed upon gold for a period of years will be found to contain gold to a slight distance above the point of contact.

DIG, v. *dĭg* [Norm. F. *diguer*, to prick: Lith. *dygus*, sharp, pointed: Sw. *dika*, to dig a ditch—from *dike*, a ditch]: to open or turn up the earth with a spade; to excavate; to work with a spade; to search: N. a thrust; a poke. DIG'GING, imp. DIGGED, pp. *dĭgd*, also DUG, pt. or pp. *dŭg*. DIG'GER, n. one who. DIG'GINGS, n. plu. places where substances are obtained by digging, as *gold-diggings*. TO DIG DOWN, to undermine and overthrow by digging. TO DIG IN, to cover by digging the earth over it.

DIGASTRIC, a. *dī-găs'trĭk* [Gr. *dis*, twice; *gastēr*, the belly]: having a double belly—applied to a muscle of the lower jaw.

DIGBY, *dĭg'bĭ:* small seaport of Nova Scotia on the Bay of Fundy, reputed for its curing of a variety of small herrings or pilchards, which are smoked and dried for export; they have a high flavor and are known in trade as Digbies. Pop. 1,150.

DIG'BY, Sir KENELME: 1603–65; son of Sir Everard Digby, one of the Gunpowder Plot conspirators, who suffered death three years after his son was born. He was brought up in the Prot. faith, and at the age of 15 was intered at Gloucester Hall, Oxford. After leaving the university, where he had acquired the reputation of great ability, he spent two years in continental travel. He returned to England 1623, and was knighted in Lord Montague's House. Under Charles I., he was a gentleman of the bedchamber, and held several public offices. In 1628, he equipped a squadron at his own expense, and sailed first against the Algerines, and subsequently against the Venetians. In 1632, on the death of Dr. Allen, of Gloucester Hall, Digby inherited his collection of books and manuscripts. In 1636, when in France, he was converted to the

Rom. Cath. faith. He returned to England 1638, and on the breaking out of the civil war, he was imprisoned as a royalist in the Winchester House, but in 1643 he was allowed to retire to France. At Paris, he was received with favor by the court, and made the acquaintance of Descartes. After Charles I. had fallen, Digby returned to England, but the parliament forbade him the kingdom, under penalty of death. Retiring to the continent, he travelled in France and Italy; but in 1655, he was again in England, and was in frequent attendance at the court of the Protector. He went again to France, and busied himself with the preparation of philosophical papers. He returned to England 1661, and died there. Digby married a daughter of Sir Edward Stanley of Tongue Castle, in Shropshire, by whom he had one son.

His works are numerous, and on a great variety of subjects, comprising *A Conference with a Lady about the Choice of a Religion* (Par. 1638), *Observations on Spenser's Fairy Queen* (Lond. 1644), *A Treatise on the Soul, proving its Immortality* (Par. 1644), *Of the Cure of Wounds by the Powder of Sympathy* (Lond. 1658), and *Discourse on Vegetation* (Lond. 1661, etc.). *The Private Memoirs of Sir K. Digby,* etc., *Written by Himself,* were published in London 1827. Digby's library, which was removed to France when the civil war broke out in England, became, on his death, the property of the French king.

DIGBY, Kenelm Henry, English antiquarian; b. 1800; d. London 1880, March 22. He was graduated from Trinity College, Cambridge, in 1819, and in 1822 published *The Broad Stone of Honor.* It was much altered in the 1828 and subsequent editions (the latest 1877), its author having meanwhile become a Roman Catholic. Among his other works may be named *Mores Catholici, or Ages of Faith* (1831–40).

DIGBY, William, English journalist and East India merchant: b. Wisbech, Cambridgeshire, 1849, May 1; d. 1904, Sep. 24. He was engaged in newspaper work in England 1868–71; in Ceylon 1871–6; in Madras 1877–9; and again in England 1880–2. After 1888 he was an East India merchant in London. He has published: *Forty Years' Citizen Life in Ceylon; The Famine Campaign in Southern India* (1876–8); *History of the Newspaper Press of India, Ceylon, and the Far East; Indian Problems for English Consideration; Indian Economics; Prosperous British India* (1901); *Natural Law in Terrestrial Phenomena;* etc.

DIGENESIS, n. *dī-jĕn'ĕ-sĭs* [Gr. *dis,* double; *genesis,* birth]: the same as parthenogenesis (q.v.).

DIGEST, v. *dĭ-jĕst'* [F. *digeste,* a collection of decisions —from L. *digestus,* disposed, set in order—from *dis, gestus,* carried on, performed: It. *digesto*]: to distribute under suitable heads or titles, as laws; to arrange in convenient order, or with due method; to think over and arrange in the mind; to dissolve or reduce the food in the stomach; to bear with patience; in *chem.,* to prepare by heat. Digest, n. *dī'jĕst,*

any compilation, abridgment, or summary of laws arranged under proper heads or titles; see CODE: the name is often given to the Pandects (q.v.) of the civil or Roman law, because they contained 'Legalia præcepta excellenter digesta.' DIGESTING, imp. *dĭ-jĕs'tĭng*. DIGES'TED, pp. DIGES'TER, n. that which aids digestion; a close vessel for boiling water at a great pressure, and therefore at a very high temperature, used for boiling gelatine out of bones, etc.; a cooking vessel. DIGESTION, n. *dĭ-jĕst'yŭn* [F.—L.]: the changing of the food in the stomach into a substance fitted for circulation and nourishment; in *chem.*, the slow action of a solvent; applied to solids in a liquid exposed to gentle heat. DIGES'TIBLE, n. *-tĭ-bl*, easy of digestion. DIGES'TIBIL'ITY, n. *bĭl'ĭ-tĭ*. DIGES'TIVE, a. *tĭv*, having the power to cause or promote digestion; promoting suppuration of a sore.—SYN. of 'digest, n.': abridgment; compendium; epitome; abstract; summary; synopsis.

DIGESTER: a closed boiler in which a temperature above the boiling point can be obtained, the hot water and steam disintegrating or digesting the substance treated. The invention of the digester is credited to Denis Papin, a French scientist. He noted that anything boiled in an open vessel was not subjected to a heat above 212° F., as the water went off into steam at that temperature, and was lost. Accordingly he constructed a boiler with a closed top, to retain the steam, and succeeded in securing a temperature of 400° F., which served to readily digest bones. This digester came into use for the manufacture of soups and gelatines from bones that had been previously wasted or thrown to the dogs.

Within recent years the digester has found a place in a number of industries. The lard or grease tank of a slaughter-house is a digester. In some American cities digesters have been employed to receive garbage and secure a product of some value from the refuse. Tannin is extracted from nutgalls by a digester, in which the material is saturated with ether.

The digester has found its most extensive use, however, in paper-making. The wood, which is abraded by grinders from the log is introduced in a form resembling fine sawdust to the digester, and comes out pulped, ready to be rolled into paper. Sulphite digester is the common name for these mechanisms owing to the fact that a bisulphite solution is employed in the process of digesting. This serves as a solvent, but being acid it attacks the iron or steel of which the digester is constructed. To protect the iron shell various linings are employed. The 'Non Antem' digester employs a lining made of a continuous sheet of lead placed against the inner sides of the shell, and held in place by two courses of acid-proof brick. The Mitscherlich digester is lined with acid-proof brick laid in Portland cement. The Graham digester is made of sheets of boiler plate, with the lead lining soldered on before bending. The Partington digester is made spherical, so that the lead lining tends to maintain its place from its

form; the lead is also burned to the iron. Pusey & Jones build a digester of welded steel, with double shells and no lining. The Schenck digester is also unlined, being made of deoxidized bronze, and in both of these last named the erosion is claimed to be very slight.

Most sulphite digesters are built in the form of an upright cylinder, with one or more manholes at the top, through which the ground wood is introduced. Steam is admitted by coils, and a high temperature maintained for about eight hours. When properly cooked, the liquid is run off and the digested material withdrawn by manholes in the bottom.

DIGESTION: this is the process whereby food is prepared for absorption and assimilation by various tissues of the body. Strictly speaking this is all that is included by the term digestion, though for the sake of completeness we may include here the absorption of the digested food, and the elimination of the waste and indigestible portions. (The reader is referred also to the articles on diseases of the intestines and of the stomach for further information regarding the processes of digestion).

Mastication is effected in the cavity of the mouth by means of the teeth. This is truly a digestive process since it not only prepares the food for its propulsion into the stomach but puts it into a condition whereby it may be more readily acted upon by the digestive fluids, the first of which that it meets being the saliva.

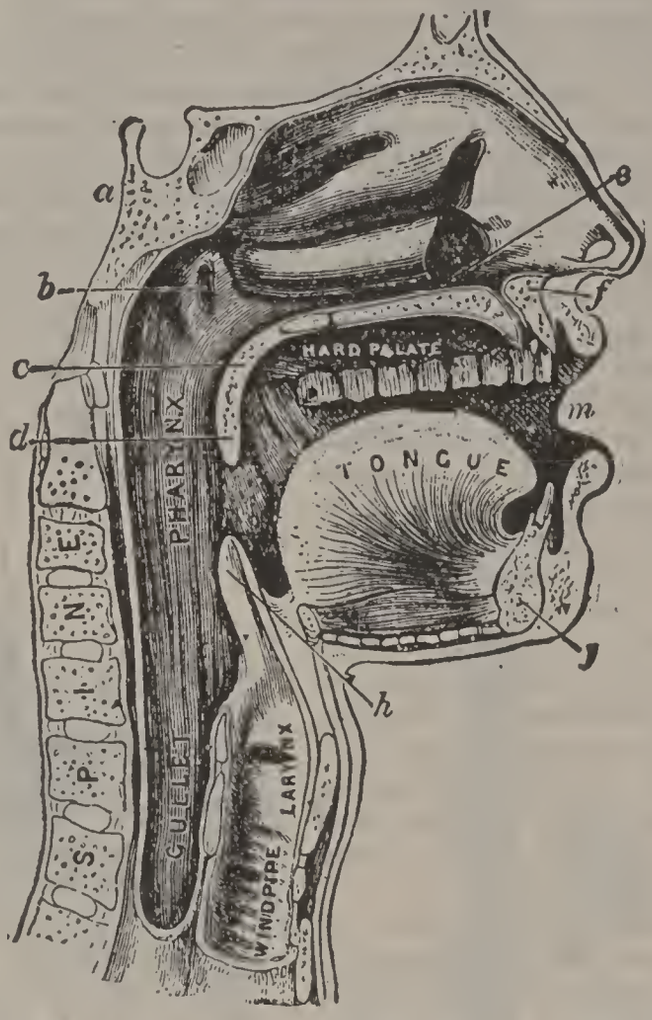
Insalivation, the first chemical step in digestion, is effected by the admixture of the secretions of the three pairs of salivary glands (the parotids, the submaxillaries, and the sublinguals) and of the buccal mucus with the triturated food. The common saliva, formed by the combined secretion of these various secreting organs, is a colorless, turbid, viscid, inodorous, and tasteless fluid, which, after standing for some time, deposits a layer of pavement epithelium and mucous corpuscles. In the normal state, its reaction is alkaline, but the degree of alkalinity varies, being greatest during and after meals. Saliva does not contain more than five or six parts of solid constituents per thousand, the most important ingredients being an enzyme termed *ptyalin*, and sulphocyanide of potassium, neither of which substances occur in any other solid or fluid of the body, and *mucin*. The daily quantity of saliva secreted by an adult man is estimated at about 48 ounces, but determinations of this kind must be regarded as only approximative and of no special importance. Thus movement of the lower jaw, as in masticating, speaking, or singing, increases the secretion; as also do acrid and aromatic substances, and dry hard food; while the use of moist and soft food is accompanied by a scanty secretion. Even the anticipation of savory food, when a person is hungry, starts a flow of saliva, 'makes the mouth water.'

The uses of saliva in reference to digestion are partly mechanical and partly chemical. The mechanical uses

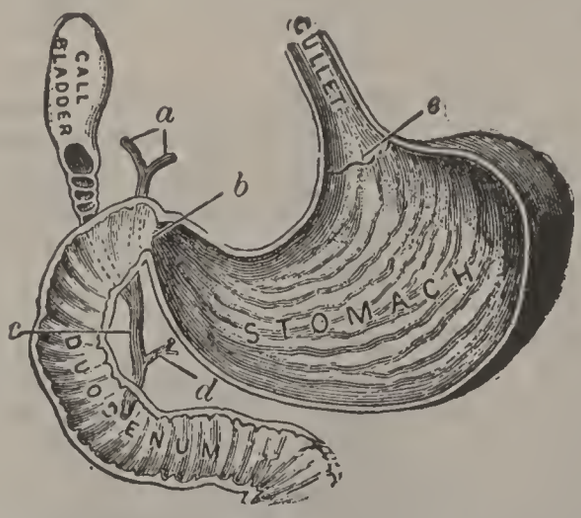
are apparent; the moistening of the dry food by the saliva serves the double purpose of adapting it for deglutition and of separating the particles, and thus allowing them to be more freely acted on by the other digestive fluids; moreover, by its viscidity, it lubricates the bolus of food, and thus facilitates deglutition. The chemical use of the saliva is to convert the amylaceous (or starchy) portion of the food into dextrin, and thus to promote its absorption. This is accomplished by the action of ptyalin which causes hydrolysis of the starch molecules and their conversion into soluble starch or amidulin. When the starch has been boiled, so that the granules are ruptured, this process takes place very rapidly—within less than a minute. When the food is properly masticated, therefore, the starch of the bread-stuffs and vegetables is well started in the process of digestion before it is swallowed. As the hydrolytic process (one by which the starch molecule takes up water and is changed chemically into a more simple compound) continues, the starch is gradually converted into dextrin and then a form of sugar called maltose and a slight amount of dextrose or grape sugar. This process is not completed in the mouth nor yet in the stomach, though the digestion of starch proceeds for a while even after the food has been swallowed. The acid gastric juice arrests it, however, in time, and it is not resumed until the now soluble starch is brought into contact with the pancreatic secretion.

Deglutition is the act by which the food is transferred from the mouth to the stomach. The pharynx, or cavity into which the mouth leads, takes only a slight part in the digestive process: between it and the mouth is the pendulous or soft palate, a movable muscular partition that separates the two cavities during mastication. As soon, however, as the latter act is accomplished, and the bolus is pressed backward by the tongue, the soft palate is drawn upward and backward, so as to permit the passage of the food into the pharynx. The bolus or pellet of food having arrived near the esophagus or gullet (which is continuous inferiorly and posteriorly with the pharynx), is driven into it by the action of certain muscles, which almost surround the pharynx, and are termed its *constrictor* muscles. All voluntary action ceases as soon as the food is pressed backward by the tongue into the pharynx. It is impossible to recall the pellet, and it is necessarily carried on (without even our cognizance) into the stomach. The contact of the pellet with the mucous membrane of the esophagus causes the muscular walls of the latter to contract, and the food is thus driven, by a series of these contractions, into the stomach.

Stomachal digestion is the next process to be considered. The whole of the alimentary canal below the diaphragm, possesses the following points in common, in relation to structure: The stomach, the small intestine, and the large intestine, are all lined by mucous membrane, have a muscular coat, consisting of two sets of distinct fibres—



Section through Mouth, Nose, etc.: *a*, Sphenoid bone; *b*, Eustachian tube; *c*, Soft palate; *d*, Uvula; *e*, Nasal passage; *f*, Upper jaw; *g*, Lower jaw; *h*, Epiglottis; *m*, Mouth.



Section of the Stomach: *a*, Ducts of liver; *b*, Pylorus; *c*, Bile duct; *d*, Pancreatic duct; *e*, Cardiac orifice.

namely, circular fibres which surround the tube or viscus after the manner of a series of rings, and longitudinal fibres running in the same direction as the intestine itself—and are invested with a serous membrane, the peritoneum, which retains the viscera in their proper position, and at the same time permits their necessary movements.

The human stomach is an elongated curved pouch, lying almost immediately below the diaphragm, and having the form of a bagpipe. It is very dilatable and contractile, and its function is to retain the food until it is duly acted upon and dissolved by the gastric juice, which is secreted by glands lying in its inner or mucous coat, and then to transmit it, in a semi-fluid or pulpy state, into the duodenum. Its average capacity is about five pints. The parts of it which have received special names (See fig. 1) are the greater curvature, (*b*), the lesser curvature, upon its upper border, and the cardiac (*c*) and pyloric (*d*) extremities.

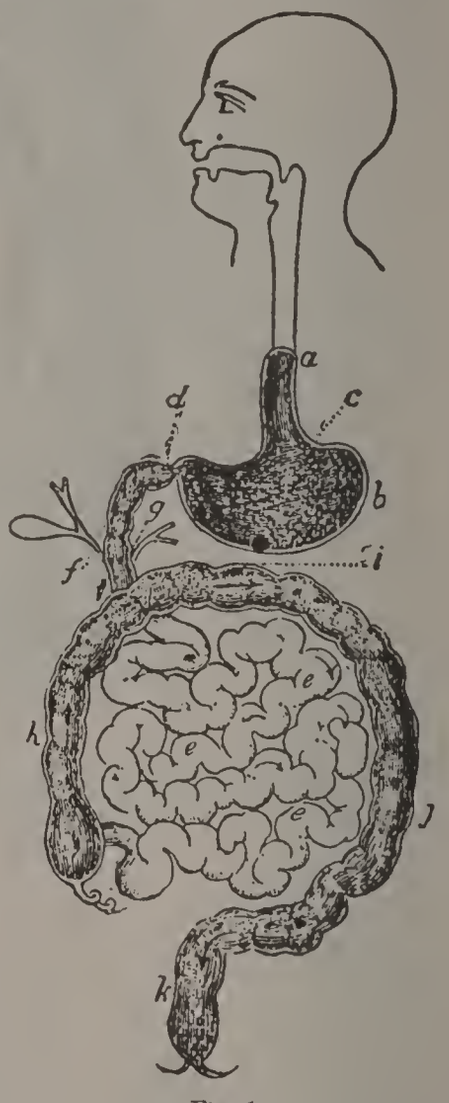


Fig. 1.
Human Alimentary Canal.
a, esophagus; *b*, stomach; *c*, cardiac orifice; *d*, pylorus; *e*, small intestine; *f*, biliary duct; *g*, pancreatic duct; *h*, ascending colon; *i*, transverse colon; *j*, descending colon; *k*, rectum.

The mucous membrane, or lining coat of the stomach, is thick and soft, and lies in irregular folds, except when the organ is distended with food. On opening the stomach, and stretching it so as to remove the appearance of folds, we perceive even with the naked eye, but better with a lens, numerous pits or depressions, irregular in shape (see fig. 2A), in the bottom of which are the openings of the gastric glands (two to four in each pit) which secrete the gastric juice. The two chief constituents of this digestive fluid, pepsin and hydrochloric acid, are secreted by different cells in the gastric glands. The gastric juice also contains another enzyme, rennin, but what cells secrete this is not yet known. The gastric juice is secreted in response to the stimulus afforded by the presence of food in the stomach, or by the taste of food in the mouth, and a copious secretion may also be excited by the mere sight of desired food—a phenomenon similar to the

'watering of the mouth' above mentioned. The fluid is colorless, odorless, and strongly acid, this reaction being due to the presence of free hydrochloric acid. This acid is strongly antiseptic, preventing putrefaction, and destroying many disease germs taken in with the food or drink. It also converts cane sugar into dextrose and levulose. The pepsin liquifies all the proteids of the food, converting them into albumoses and finally into peptone.

When food is introduced into the stomach, three special phenomena take place in that viscus: 1. There are certain movements induced which are dependent on its muscular coat; 2. The mucous membrane is altered in appearance; and 3. There is the secretion of the gastric juice.

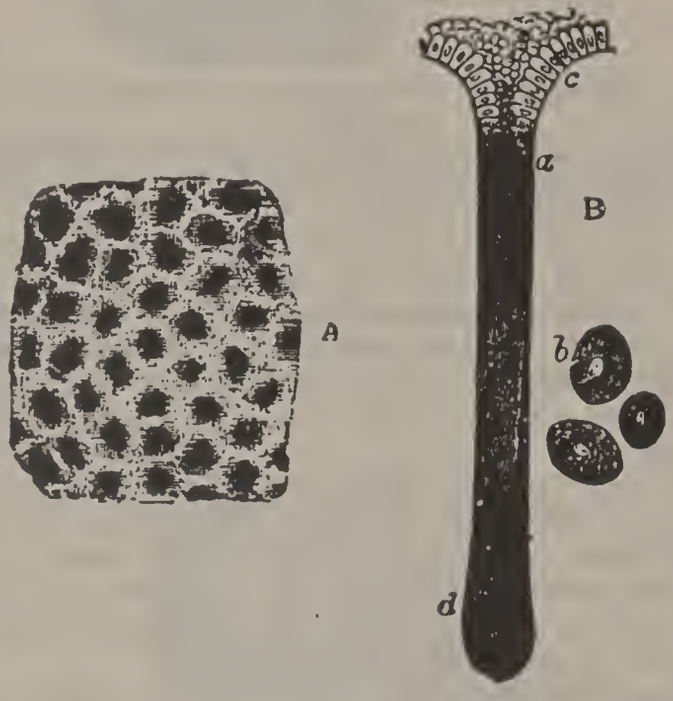


Fig. 2.

A, inner surface of the stomach, showing the cells after the mucus has been washed out, magnified 25 diameters. B, gastric gland from the middle of the human stomach, magnified about 150 diameters: *a*, wall of the tube, lined with large oval nucleated cells; *b*, the same cells isolated; *c*, nucleated cells of columnar epithelium, occupying the upper parts of the tube; *d*, blind extremity of the tube.

When food is in the stomach the muscular walls are contracted down on it, and the two orifices (the cardiac and pyloric) are closed by the firm contraction of the circular muscular fibers surrounding them. The cardiac orifice opens whenever a bolus of food is swallowed, to admit it to the stomach, and the pylorus opens from time to time to permit the passage of food properly prepared for further treatment in the intestine. While food is in the stomach the muscular walls of this viscus are in a constant state of alternate contraction and relaxation by means of which the food is thoroughly mixed with the gastric juice. The food passes along the walls of the stomach in a direction towards the pylorus, and if it is not yet fit for intestinal digestion is returned toward the

cardiac end through the centre (fig. 3). When it is liquified, as it reaches the pylorus the latter opens a little so as to allow the fluid part to pass, but closes promptly when any solid mass attempts to escape.

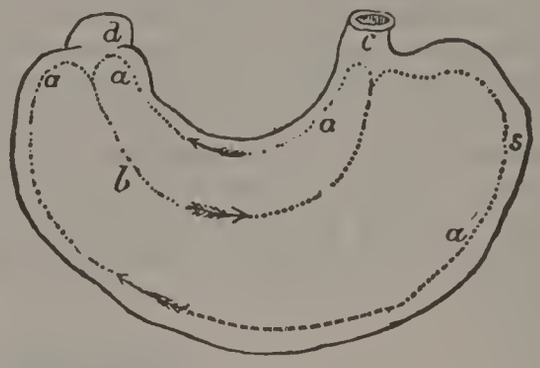


Fig. 3.

Diagram to show the general direction of movement impressed on the semi-fluid in the stomach.

aa, the hemispherical or surface current, carrying the semi-fluid food toward the closed pylorus, where it is reflected into *b*, the central current, which unites the cardiac (*c*) and pyloric (*d*) openings.

The mutual interference of these currents at their borders causes a uniform admixture of the various substances composing them, while the reflection of the upper and lower currents into one another insures an equal contact of all the mass with the secreting surface of the mucous membrane.

The gastric juice exerts no apparent action on the non-nitrogenous articles of food—namely, the fats and the carbohydrates (sugar, starch, etc.); as, however, the fats exert a favorable influence on the digestion of nitrogenous matters, it is possible that they undergo some slight, though not appreciable modification.

Although the main object of the gastric juice is to dissolve the albuminates, the process appears never to be complete, i.e., all the albumose is not converted into peptone in the stomach. The process of gastric digestion is slow. According to Beaumont's researches on Alexis St. Martin, the mean time required for the digestion of ordinary animal food, such as butcher's meat, fowl, and game, was from two hours and three-quarters to four hours. Fatty food is retained longest in the stomach, and digestion is also slower when there is diminished acidity of the gastric juice or when the stomach is dilated. Fluids however, remain but a short time, and experiment has shown that their absorption takes place very shortly after they are swallowed. The blood-vessels (capillaries) of the stomach constitute the principal channel through which fluids pass out of this organ, though a large portion passes through the pylorus into the intestinal tract. As the veins of the stomach, formed by the union of these capillaries, contribute to form the portal vein, the absorbed matters pass directly to the liver, and probably stimulate it to increased secretion.

We must now follow the progress of the semifluid mass known as the *chyme*, from the stomach into the small intestine, and notice the changes which are collectively

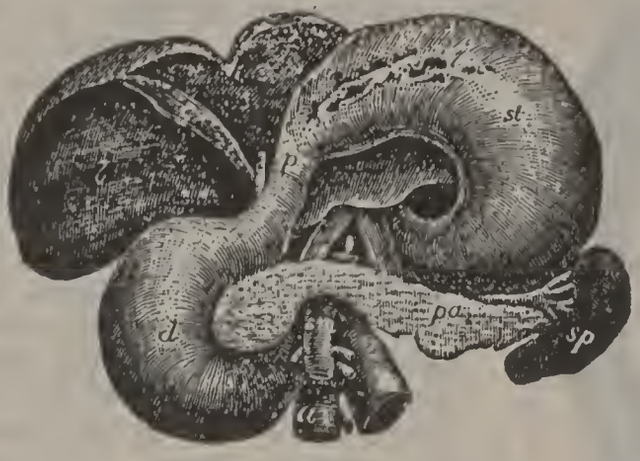


Fig. 4.

The under surface of the stomach and liver, which are raised to show the duodenum and pancreas.

st, stomach; *p*, its pyloric end; *l*, liver; *g*, gall-bladder; *d*, duodenum, extending from the pyloric end of the stomach to where the superior mesenteric artery (*sm*) crosses the intestines; *pa*, pancreas; *sp*, spleen; *a*, abdominal aorta.

impressed upon it, and are known as *chylification* or intestinal digestion. The mucous membrane of the small intestine consists in a great measure of laterally grouped

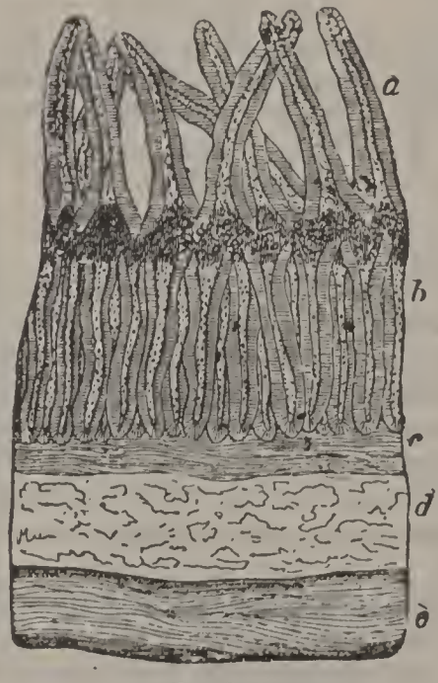


Fig. 5.

Vertical and longitudinal section of the small intestine in the lower part of the jejunum, showing the general arrangement of its coats.

a, villi; *b*, intestinal glands or follicles of Lieberkühn; *c*, submucous areolar tissue; *d*, circular muscular fibres; *e*, longitudinal muscular fibres.

tubes: see fig. 5, which exhibits a section of the mucous membrane of the small intestine in the dog. These tubes, which form the great mass of the middle portion of the

section marked *b*, are commonly called the *follicles of Lieberkühn.* They are straight, nearly uniform in diameter through their entire length, and are parallel to one another, and perpendicular to the inner surface of the small intestine on which they open. They secrete the intestinal juice, a clear, yellowish fluid of alkaline reaction.

Fig. 6.

Two villi, denuded of epithelium, with the lacteal vessels in their interior.

a, limiting membrane of the villus; *b*, basis of the same; *c*, dilated blind extremity of the central lacteal; *d*, trunk of the same.

The projecting bodies marked *a* in fig. 5 are termed the *villi;* they are minute processes of the mucous membrane of the small intestine. They first appear in the duodenum, where they seem to develop themselves as elongations of the partitions between the cells or pits into which the tubes open. Comparatively scanty in number at first, they become very numerous (covering the whole surface) in the further part of the duodenum and the rest of the small intestines, giving to the mucous membrane a velvet-like or pilous appearance; they finally cease at the ileocecal valve, which forms the boundary between the small and large intestine. In man, they are conical in shape, and measure from one forty-fifth to one-sixtieth of an inch in length. They vary much in shape and size in the lower mammals and in birds. In carnivorous animals, as the dog, they are longer and more filiform than in man.

Each villus is provided with an abundant set of capillaries, which absorb fluid matters, which thus find their way directly from the bowels into the blood (fig. 7). A single artery enters its base, and passing up its centre, divides into a capillary plexus, which almost surrounds the villus immediately beneath the mucous membrane. From these arise small veins, which usually pass out of the villus in two, three, or more trunks, and contribute to form the portal vein.

The villus also contains in its interior one or more *lacteals*, vessels with club-shaped closed extremities (fig. 6), which absorb the chyle from the intestine. Their milk-white appearance, when they are filled with chyle, suggests the origin of their name, and indicates their function which is the absorption of chyle.

The mucous membrane of the small intestine presents numerous transverse folds, termed the *valvulæ conniventes*, from their valvular form and from their movements under water resembling the winking motion of the eyelids (fig. 8). Each fold passes round three-fourths or more of the gut; and in the lower part of the duodenum, and in the jejunum

(the parts in which they are most fully developed), they are often more than half an inch in depth; further on, they

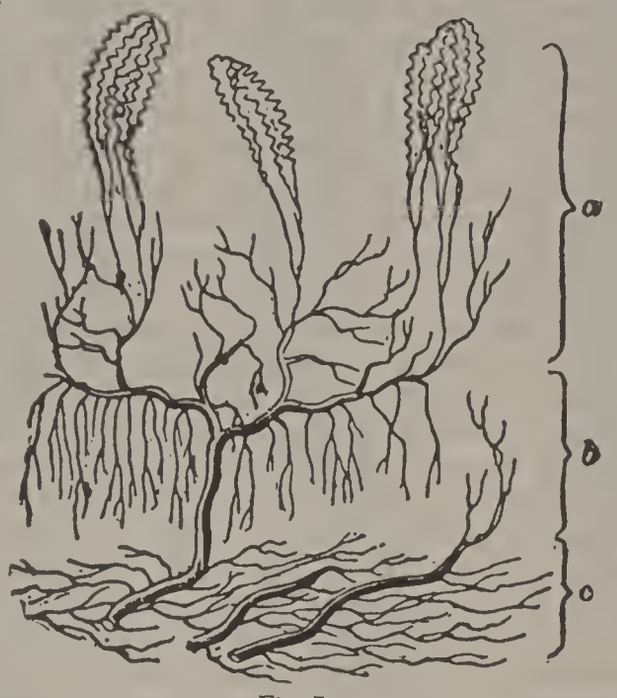


Fig. 7.

Vertical section of the coats of the small intestine, showing the capillaries and the beginnings of the portal vein. The arteries are not seen, not having been penetrated by the injection which has been thrown into the portal vein.

a, vessels of the villi; *b*, those of the tubes or follicles of Lieberkuhn; *c*, those of the muscular coat.

diminish in depth, length, and number, and in the lowest part of the ileum they can scarcely be traced. Their object clearly is to increase the extent of the absorbent mucous membrane.

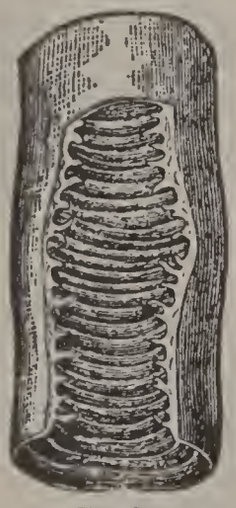


Fig. 8.

Small intestine distended and hardened by alcohol, and laid open to show the valvulæ conniventes.

In addition to Lieberkühn's follicles, which exist in the whole of the small intestine, there are other glandular or secreting structures, imbedded in the submucous tissue of certain portions of the intestinal tract. These are 1. Brunner's glands, which occur only in the duodenum; 2. Solitary glands, which seem to occur in all parts of the intestine, both small and large; and 3. Peyer's patches, which are usually confined to the ileum.

Brunner's glands are most abundant at the pyloric end of the duodenum. In structure, they resemble the pancreas, and secrete a fluid containing a digestive enzyme. The *solitary glands* occur in all parts of the intestine, but are perhaps more numerous in the jejunum than elsewhere. They are little masses of lymphoid tissue. *Peyer's patches* are mere aggregations of solitary glands, forming oval patches in the ileum. These vary in size and number, being largest toward the cecum, where their long diameter sometimes measures

three or four inches, and smallest towards the jejunum; their number varies from 15 to 20, or more.

The pylorus is an anatomical barrier between two entirely different digestive cavities. The stomach is a comparatively simple saccular organ; the small intestine is a very intricate tube, some twenty feet long. The reaction of the gastric juice is acid but that of the intestinal secretions is alkaline, and the digestive enzymes of the intestinal juice and pancreas are destroyed by acid. As the chyme is discharged in small amounts through the pylorus it is received in the duodenum containing a quantity of alkaline fluid which quickly neutralizes the acid of the gastric juice and arrests its further digestive action.

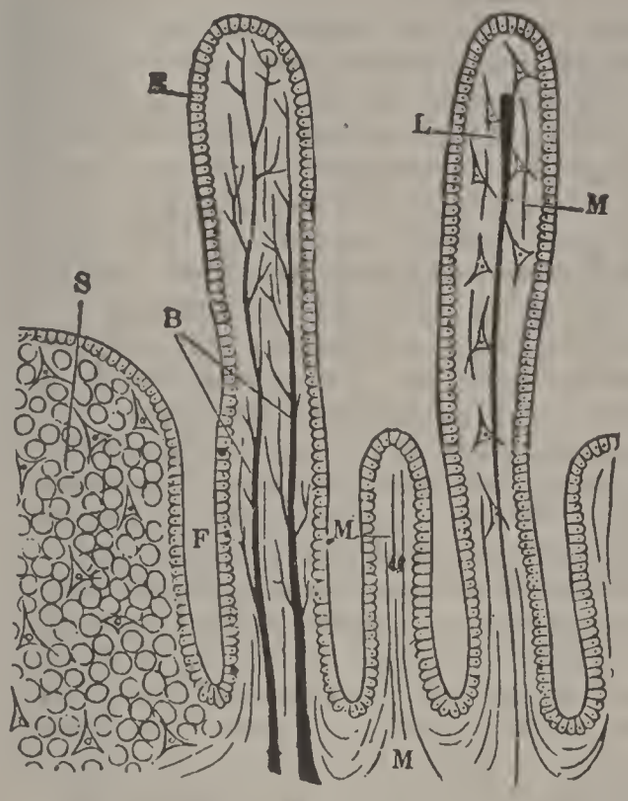
Bile.—This secretion is one of the most complex in the body, and it contains both useful and excrementitious substances, so that it must be classed both as a secretion and as an excretion. Cholesterin, a peculiar crystallizable body, is a waste product. The color of bile is due to pigments derived from the blood and practically identical with that found in old blood clots. Bile has no digestive power, its chief importance being in the assistance it gives to the absorption of fats and in its solvent action.

The pancreatic juice is the most important of the digestive fluids, at least the changes which its enzymes induce in the food-stuffs are the most important which they undergo. It contains three enzymes acting respectively on proteids, carbohydrates, and fats—the three chief classes of food-stuffs; these are trypsin for proteids, amylopsin for carbohydrates, and steapsin for fats.

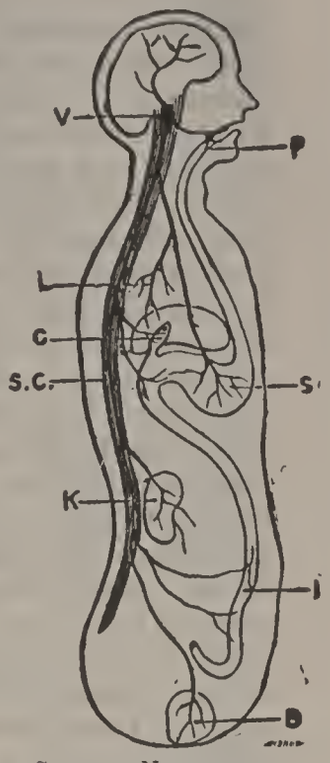
The intestinal juice has no action on proteids and no more action on fats than any other alkaline fluid. To some extent, it will convert starch into maltose but its main action is due to the 'invertin,' a ferment which changes maltose, cane sugar, and milk-sugar into glucose which is the only form of sugar normally found in the blood.

The following table from *The Medical and Surgical Reporter*, Vol. LXXV, by Dr. A. L. Benedict, gives a complete summary of chemical digestion with admirable clearness:

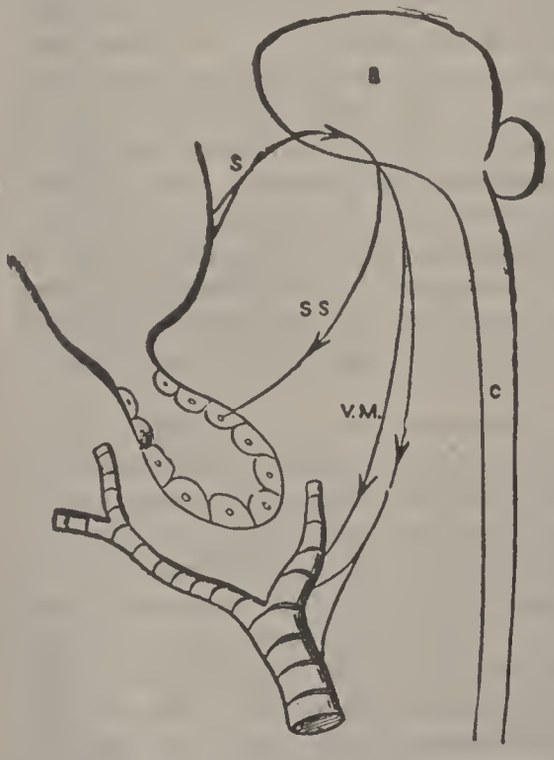
Ferment.	Digests.	Forms.	Secreted by	Reaction	Digestive cavity.
Ptyalin	Cooked starch	Maltose	Salivary glands	Alkaline	Stomach
Pepsin	Proteids	Peptone	Gastric glands	Acid	"
Trypsin	Proteids	Peptone Leucin Tyrosin	Pancreas	Alkaline	Intestine
Amylopsin	All starches	Maltose			
Steapsin	Fats	Glycerine and Soaps			
Invertin	Maltose cane sugar Milk-sugar	Glucose	Intestinal glands		
Rennin			Gastric glands Pancreas Intestinal glands	Coagulates milk and probably other raw albumins.	



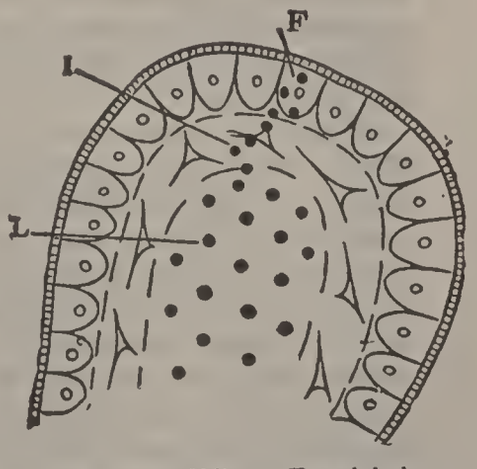
Section of Intestinal Mucous Membrane: L, Lacteal in centre of villus; E, Epithelium covering Bvillus; Blood-vessels represented; F, Follicle of Lieberkuhn S, Part of a solitary gland; M, Muscular fibres.



Sensory Nerves concerned in Vomiting. Nerves come to vomiting centre V, through spinal cord S. C., from pharynx P, lungs L. gall-bladder G, stomach S, kidney K, intestine I, and bladder B.



Nervous Mechanism of Secretion: B, Brain; C, Spinal cord; S, Nerve passing from mucous membranc of mouth to brain; SS, Nerve passing to cell in salivary gland; V. M., Nerve passing to blood-vessels of gland.



The Top of a Villus. Fat globules are represented as passing through one of the epithelial cells, F, on through the tissue of the villus, I, into the central lacteal, L.

Absorption.—It will be noted that all chemical and mechanical digestion has as its object the changing of solid and, therefore, unabsorbable foods, into soluble substances. Water and mineral salts, though properly classed as food, need no digestion. Starches are digested both by ptyalin and by amylopsin into maltose, and may be to some extent absorbed as such from the stomach and intestine. Normally, however, maltose as well as milk-sugar and cane-sugar is still further changed into glucose by the intestinal ferment, invertin. Proteid substances are digested both by pepsin, in combination with hydrochloric acid, and by trypsin, in combination with an alkali—in the stomach and intestine respectively—the result being albumoses and peptone. Fats are emulsified and saponified by the combined alkaline juice of the intestine, steapsin, and bile. Water, mineral salts, peptones, and sugar are perfectly soluble, and are absorbed by the blood vessels which converge from the stomach and intestine to the liver. Emulsified and saponified fats are absorbed through the lymphatic vessels which begin in the solitary and agminated glands of the intestine, or in the central lymphatic of a villus, pass between the layers of the mesentery, and converge to form the receptaculum chyli. This is a pouch of varying size and location, situated to the right of the aorta in front of the lumbar vertebræ. On the way to the receptaculum chyli, the fats are elaborated, in some unknown way, by the lymph glands of the mesentery. From the receptaculum, they are carried by the thoracic duct, the largest lymphatic channel of the body, upward in front of the spine, then to the left and into the blood of the subclavian vein. Thence the nutriment is borne to the heart and is distributed throughout the body. On account of the whitish color of any emulsion of fat, the mesenteric lymphatics, for a few hours after a meal, during the period of absorption, are plainly seen as fine lines, radiating from the attachment of the mesentery, and are called lacteals, from the milky character of their contents. It must not be supposed that no peptones and glucose enter the lacteals, nor that the blood of the portal vein does not convey some fatty matter from the intestine.

Motor function of the intestine.—All internal tubes of the body are surrounded with unstriped, involuntary muscle. The intestine, like the esophagus, has an outer longitudinal layer and an inner circular layer of muscle. The joint action of these muscular coats produces a progressive wave of contraction, as if a soft tube were stripped by the hand encircling it. From the similarity to the movement of a worm, this action has been called *vermicular*, and, from its progressive motion, *peristaltic*. The peristaltic action is not continuous, and the food mass is arrested from time to time and submitted to a sort of churning, backward and forward movement, by means of which it is more thoroughly mixed with the digestive fluids. The peristaltic action is increased and the churn-

ing action checked or abolished by the presence of solid and irritating substances, and by any moderate degree of inflammation. Some drugs increase and some diminish peristalsis. Indigestible substances, if not irritating, are rather beneficial than otherwise, from the stimulation of the movement of the bowel. It is in this way that figs and other fruits having indigestible residue in the form of seeds or skins, act as laxatives. The fear of lodgment of seeds in the vermiform appendix is largely imaginary. Few cases of inflammation of this appendage are due to foreign bodies, the vast majority being caused indirectly by constipation. Solid substances are passed through the intestine faster than liquids, the latter being retarded by the valvulæ conniventes, which may be compared to the 'fish-stairs' used in hatcheries to slow the current of water running down an incline. Ordinarily, indigestible but unirritating substances require about forty-eight hours to pass through the 25 or 30 feet of the alimentary tract. There should, however, be one evacuation of the bowels daily. The longitudinal coat of the large intestine does not cover the entire bowel, but is arranged into three bands. The bowel forms pouches between these bands, so that water may be absorbed, leaving a comparatively dry mass, and allowing the molding of the feces into the characteristic shapes and sizes which differ with different animals.

The line of demarkation between the small and large intestine is very obvious, and by the peculiar arrangement of the ileocecal valve (see fig. 9), matters are allowed to pass forward with facility, while regurgitation is prevented. For anatomical details regarding the large intestine see ALIMENTARY CANAL: CÆCUM: COLON. The contents of the large intestine differ very materially from those which we have been considering in the last paragraph, and constitute the feces. They are more solid and homogeneous, and are often molded into a definite shape by the cells of the colon. The only essential change which the contents undergo in this part of their course is that they increase as they pass onward in solidity, in consequence of the absorption of fluid from them by the mucous membrane. They are propelled forward into the sigmoid flexure at the lower end of the colon by the vermicular action which has been already described. Here they accumulate, passing down into the rectum just prior to the act of defecation. This is effected partly by the muscular fibres of that part of the intestine which are stimulated to contraction by a certain degree of distention, and which are to a certain extent under the influence of the will, and partly by the simultaneous contractions of the abdominal muscles and of the diaphragm, which by reducing the anteroposterior and transverse diameters of the abdominal cavity, compress the intestinal canal in such a manner as greatly to assist the expulsive action of the rectum. These forces, or some of them (for usually the detrusive action of the muscular fibres of the rectum

is sufficient), overcome the passive contraction of the sphincter, and the act of defecation is the result.

The feces consist of a mixture of undigested particles of food (such as vegetable cellular tissue, fragments of tendon, skin, and half-digested muscular fibre), of epithelium and mucus (derived from the intestinal walls), and of traces of decomposed biliary matters. Their peculiar odor is due largely to the presence of volatile bodies set free by the action of putrefactive bacteria on proteid material. Their color varies with the food. On a mixed diet, they are of a yellowish-brown tint; on a flesh diet, much darker; and on a milk diet, quite yellow—and they become darker on exposure to the air. Their reaction is usually but not invariably alkaline. Their daily quantity is very variable; the mean may be estimated at about 4-6 ounces, of which very nearly one ounce is solid matter, the rest being water; the largest and the smallest quantities being 10 ounces, and rather more than 2 ounces.

Fig. 9.

Cæcum inflated, dried, and opened to show the arrangement of the valve.

a, termination of the ileum; *b*, ascending colon; *c*, cæcum; *d*, a transverse constriction projecting into the cæcum; *ef*, lips of the valve separating the small from the large intestine; *g*, the vermiform appendix of the cæcum.

Bacteria and Gases.—Heat, moisture, and the presence of organic matter are requisite to bacterial life. These conditions being present, as in the alimentary tract, germs will thrive in abundance, unless there is some antagonistic factor. A dozen or more forms of bacteria are found in the mouth and throat at all times, including micrococci, both separate and in chains; bacilli, yeast cells, hyphomycetes (microscopic fungi, one grade higher than bacteria), and occasionally spiral bacteria. Foul breath, coated tongue, and decay of the teeth, are all explained by the action of germs.

Food, unless sterilized immediately before entering the mouth, and saliva must carry germs to the stomach. Here, however, the antiseptic power of hydrochloric acid kills some and holds the rest in check till the intestine is reached. A sour stomach, with heart-burn and disagreeable eructations of gas, indicates fermentation due to the action of germs, and depends ultimately on the lack of the proper acidity of the gastric juice.

In the intestine billions of germs are ever present. Of these, the most characteristic is the *Bacillus coli communis*. The bacteria are most active in the large intestines where they decompose the proteid matters that have escaped

digestion and cellulose and other indigestible material. When this decomposition process is very active, and especially when the material is retained too long in the intestines, the products of the decomposition may be absorbed into the system, giving rise to various symptoms and diseases, grouped under the designation, autointoxication or autotoxemia. The gases formed in the intestines are chiefly hydrogen, sulphureted hydrogen, and marsh gas.

In the mammalia are three different forms of stomach —the *simple*, the *complex*, and the *compound*. In the *simple* form, the organ consists of a single cavity, as in man, but the form may vary greatly. It is most simple and relatively smallest in carnivorous animals. This is the most common form of mammalian stomach. In the *complex* stomach, that viscus is made up of two or more compartments communicating with one another, but often without presenting any marked difference of structure. The kangaroo, the porcupine, and the squirrel, afford good examples of this form of stomach. In the cetacea, the stomach consists of from five to seven cavities, that communicate with each other; but whether their functions are similar or different is not known. The *compound* stomach occurs in the ruminants (the cow, sheep, camel, etc); it consists of four distinct cavities, differing very materially in their size, and in the arrangement and structure of the lining mucous membrane (see fig. 10). The first, and by far the largest cavity, is the paunch or *rumen, b;* it occupies a great part of the abdominal cavity, and is the receptacle into which the food is received when first swallowed. The second cavity is termed (from the peculiar arrangement of the lining membrane, which forms deep polygonal cells) the honey-comb or *reticulum, c.* The third cavity presents a foliated appearance internally, and thence is popularly known as the manyplies, *d.* In anatomical works, it is termed sometimes the *psalterium*, and sometimes the *omasum.* The fourth division, termed the reed or *abomasum, e,* is somewhat of a pyriform shape, and is the true digestive stomach, in which alone gastric juice is secreted, all the preceding cavities being merely for the purpose of preparing the food for the more essential changes which it is here destined to undergo. The food passes first in a crude unmasticated state into the paunch, which, like the crop of birds (noticed below) serves as a receptacle for the food until the act of feeding is concluded, and moistens it with the fluid secreted from its walls. The water, however, which the animal drinks, seems to pass directly into the second stomach. During rumination, small portions of the food pass from the paunch into this second stomach, whence they are returned, in the form of pellets, to the mouth, where they undergo thorough mastication, and are then returned, as a pulp, by the esophagus directly into the third stomach. The direction of the food into one or other of these cavities is altogether independent of the will, and results from a peculiar ar-

rangement and property of the lower end of the esophagus, which does not terminate at its opening into the paunch on one side, and the second stomach on the other, but is continued onward as a deep groove or semi-canal, with two lips. If these lips come in contact, they form a perfect canal, leading directly to the third stomach; while if they remain open, the food passes into the first or second stomach. The dry food first swallowed opens the lips and escapes into the paunch, while the masticated food, being soft and pulpy, passes along the groove, without opening

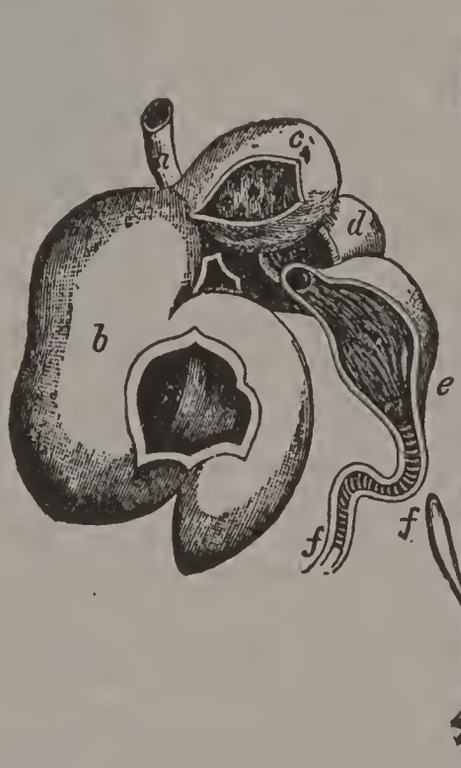


Fig. 10.

Compound stomach of ox.

a esophagus; *b*, rumen, or paunch; *c*, reticulum, or second stomach; *d*, omasum, or third stomach; *e*, abomasum, or fourth stomach; *f*, the duodenum.

Fig. 11.

Alimentary canal of fowl.

a, esophagus; *b*, crop; *c*, proventriculus, or secreting stomach; *d*, gizzard, or triturating stomach; *e*, intestinal canal; *f*, two long cæcal tubes indicating the theoretical commencement of large intestine.

its lips, into the third stomach. Here it is diffused over a large surface of mucous membrane, and doubtless undergoes certain changes before entering the fourth or true stomach. In the camel, the dromedary, and the llama, numerous rows of large quadrangular deep water-cells are developed on the parietes of the second stomach, and on the part of the paunch next to that cavity. These cells are surrounded by muscular fibres, which, by their contraction, exclude the food from their interior, and by their gradual opening, the water is allowed to mix in successive small quantities with the food. It is by this arrangement that these animals only require to drink at comparatively long intervals. The intestinal canal of the ruminants is of great length, being sometimes as in the sheep, more than

thirty times the length of the body of the animal; and in herbivorous animals generally, as compared with carnivorous, the canal is very long.

It is in the large intestine that, next to the stomach, we find most varieties of structure. Cuvier has given the following *résumé* of the principal facts connected with this subject, to which, however, there are numerous exceptions. 1. In man, the orangs, and the wombats, there are both cecum and vermiform appendix. 2. In the other quadrumana, the digitate carnivora, the marsupiata, the rodentia, the pachydermata, the ruminanta, the solipeds, and the amphibious mammals, there is a cecum (often in vegetable-feeders larger than the stomach, and probably subservient to the digestive process), but no vermiform appendix. 3. In the edentata, the plantigrade carnivora, and the cetacea, there is neither cecum nor vermiform appendix.

In birds, as in all other classes of animals, the alimentary canal varies according to the nature of the food; being long and capacious, and in some parts highly muscular, in the granivorous tribes, while it is much more simple in those which live on fish and other animal food. The common fowl is a good example of the former class (see fig. 11). The esophagus, about the middle of its course, a little above the union of the clavicles (the furculum), presents an enlargement termed the crop or *ingluvies*, which varies in form and structure according to the food, and is provided with numerous glandular follicles. Just before terminating in the gizzard, the esophagus again dilates to form a second but smaller cavity, known as the glandular stomach, *proventriculus*, or *ventriculus succenturiatus*, *c*, whence a copious secretion of gastric juice is poured out and mixed with the food, which, having previously been macerated by the secretion of the crop, now passes on to the gizzard *d*, which is a muscular organ of immense strength, which grinds and crushes whatever is placed in its central cavity—a process that is facilitated by the presence of pebbles and gritty material, which are instinctively swallowed by the bird, and act the part of millstones. There is no very marked division in birds between the large and small intestine, the theoretical limit being indicated by the presence of two (sometimes only one) cecal appendages, *f*.

The digestive organs of reptiles present no special points, except that as the ophidians (serpents) and saurians (lizards) are mostly carnivorous, and most of the chelonians (tortoises) are herbivorous, the apparatus in question is more simple in the former than in the latter.

The amphibia afford an excellent illustration of the close connection between the nature of the food and the development of the intestinal canal. In the young tadpole of the common frog, which lives upon the soft vegetable matter of fresh-water ponds and ditches, the stomach is narrow and elongated, and the intestine is of extraordinary length, and of nearly equal diameter throughout, being coiled up

in a spiral manner, and distending the capacious abdomen. As the tadpole becomes metamorphosed into a frog, it changes its vegetable food for slugs, worms, grubs, flies, etc., and, at the same time, the alimentary canal becomes very much shortened, and its divisions into stomach, etc., more distinctly marked.

In osseous fishes, the alimentary canal is generally shorter and more simple than in the higher vertebrata, in many—as, for example, the herring—being shorter than the body, and, excepting the stomach, running in nearly a straight line through it. In the cartilaginous fishes, as the sharks, rays, etc., a spiral valve winds in close turns from the pyloric to the anal extremity, leaving merely a small central aperture, along which the contents slowly pass. By this singular arrangement, the intestine, though short in proportion to the length of the animal, presents an enormous absorbing surface.

There are various modifications presented by the digestive organs in the different classes of the invertebrate animals. Among the lowest and simplest animals, is the *hydra* or fresh-water polyp, a minute creature, consisting of nothing but a bag or stomach, with tentacles surrounding its single orifice. The animacules, etc., which the hydra catches by these lasso-like tentacles (see HYDRA), are drawn into the interior, where they are digested, and applied to the nutrition of the organism, the insoluble portions being rejected by the aperture through which they entered. In the *Actinophrys sol*, or sun-animacule, there is no persistent aperture; but when its radiating filaments—from which it derives its name—have secured a particle of organized matter fit for its nourishment, they twist over it, compress it against the globular body, which first yields, and becomes concave at the point, and finally closes over it, the prey being distinctly visible in the interior. This astomatous animacule can thus form a mouth and stomach when it requires them. The indigestible remains are ejected by a corresponding reversed process. The *amœba* or *sponge-proteus* neither has a mouth and stomach, nor can it construct these organs; it simply folds itself around the solid particles from which it derives its nourishment, and imbibes their nutritious fluids through its cell-wall.

DIGGED, DIGGING. See DIG.

DIGGINGS, a colloquial expression among miners in North America, Australia, South Africa, etc., the term designating the places from which gold is procured by means of surface excavations. The word was originally used to designate any place where ore was dug, but proceeding from the mining regions it subsequently came into use as a slang expression and has now become an every-day expression in referring to a region, locality, or place, as:

'She won't be taken with a cold chill when she realizes what is being done in these diggings?' Dickens, *Martin Chuzzlewit*.

DIGGS, Annie L., American author and librarian: b. London, Ontario, Canada, 1853. She was the first woman to lead a delegation at a national political convention, serving as chairman of the delegation from the District of Columbia, at the National People's Party Convention, Omaha, 1892. She is a temperance worker and political speaker, and president of the Kansas State Woman Suffrage Association, and she has been state librarian of Kansas since 1898. She is the author of *Little Brown Brothers*, and many short stories.

DIGHT, v. *dīt* [AS. *dihtan*, to set in order, to arrange: Ger. *dichten*, to meditate, to contrive: Scot. *dicht*, to prepare]: to dress; to adorn; to prepare. Dight'ing, imp. Dight'ed, pp.

DIGHTON ROCK, a boulder of 'greenstone' (in fact, bluish-gray), in Berkley, Bristol co., Mass., opposite Dighton, on the east shore of the Taunton River, about 10 feet from low-water mark, and covered two or three feet deep at each flood tide. It is 11½ feet long and about five feet high, with a flat face toward the river, once covered with inscribed characters varying from scratches to one-third of an inch deep, not chiseled, but 'pecked' in. For many years the stream of visitors, unchecked by any authority, have so often scrubbed off the tidal deposits of dirt to see the characters more plainly, that most of the latter are effaced and the whole past effective study. From old drawings, however, and comparison with similar petroglyphs elsewhere, there is no doubt it is Indian; Schoolcraft says, in the symbolic character of the Kekeewin. Enthusiasts at various times have made wonderful interpretations of it. Rafn of Copenhagen found the name of Thorfinn on the drawing sent him and thought it a record of the Vinland settlement; an Orientalist deciphered 'melek' (king), and considered it Phœnician, and another believed it Scythian. Many drawings have been made of it since the first by Samuel Danforth in 1680.

DIGIT, n. *dĭj'ĭt* [L. *digĭtus*, the pointing thing, a finger, akin to Skr. *diç*, to show, to point out: It. *digito*, a finger]: an arithmetical figure—the digits are from 0 and 1 to 9: in *measure*, a finger's breadth, or ¾ of an inch: in *astron.*, one-twelfth part of the apparent diameter of the sun or moon, thus an eclipse of 6 digits is an eclipse covering half of the sun or moon: in *anat.*, a finger or toe. Dig'ital, a. *-ĭ-tăl*, pertaining to the fingers or resembling them.

DIGITALIEÆ, n. plu. *dĭ-jĭ-tā'lĭ-ē-ē* [L. *digitalis*, pertaining to a finger]: a tribe of the sub-order *Rhinanthideæ*, in the arrangement of *Scrophulariaceæ* given by Bentham and adopted by Lindley.

DIGITALIS, *dĭg-ĭ-tā'lĭs* [L. *digitalis*, pertaining to the finger, from digĭtus, a finger]: genus of plants of the nat. ord. *Scrophulariaceæ*. The most important species is the D. purpurea or Foxglove, a native of Great Britain and of Central and Southern Europe. It is a biennial herb about 2-5 feet high, with large succulent leaves, and

tubular purple flowers. The leaves are used in medicine under the name of digitalis. They are mostly obtained from the wild plants growing in the mountainous regions when two-thirds of the flowers are expanded. The active principles in the leaves consist of four or five glycocides: digitoxin, digitophyllin, digitalin, digitaleïn, and digitonin. The seeds also contain large amounts of active glycocides. The action of digitalis on the body is complex. It is primarily a local irritant causing secondary paralysis of the sensory nerve-endings. It is bitter to the taste, followed by burning and swelling of the mucous membrane. It is an irritant to the intestines, where it may cause nausea and vomiting. After absorption the chief action of the drug is on the central nervous system, the heart, and the blood vessels. The action on the nervous system is of secondary value to the heart activities. The action on the heart-muscle is the most important property possessed by digitalis, both pharmacologically and therapeutically; it also raises the pressure of the blood vessels, and increases the amount of blood in all the organs of the body, including the heart itself. It is thus one of the great cardiac tonics, when used within physiological limits, and is indicated in most cases of heart disease where there is malnutrition caused by the dilatation of the chamber or a leakage of the valves.

DIGITA′RIA: see MILLET.

DIGITATE, a. *dĭj′ĭ-tāt*, or DIG′ITATED, a *-tā-tĕd* [L. *digĭtātus*, having fingers or toes—from *digĭtus*, a finger]: in *bot.*, branched like fingers—applied to a compound leaf, composed of several leaflets attached to one point. DIG′ITA′TION, n. *-tā′shŭn*, a division into finger-like processes. DIG′ITATELY, ad. *tāt-lĭ*. DIG′ITIFORM, a. *-ĭ-tĭ-fawrm* [L. *forma*, shape]: in *bot.*, applied to an anomalous corolla shaped like the finger of a glove.

DIGITIGRADE, a. *dĭj′ĭ-tĭ grād* [L. *digĭtus*, a finger; *grădĭŏr*, I walk]: walking on the toes, as the cat, the weasel, the lion, etc.; belonging to the ord. DIG′ITIGRA′DA, *-grā′dă*, in the zoological system of Cuvier, one of the tribes of the *Carnivora* (q.v.), distinguished by walking on the toes alone, the heel not touching the ground. Among the digitigrade quadrupeds are included the most carnivorous of the *Carnivora*, the feline and canine families; hyenas, civets, weasels, etc. The weasel family (*Mustelidæ*), however, forms a connecting link, in respect to the character derived from the mode of walking, between the tribe Digitigrade and the tribe *Plantigrada* (q.v.), being, in fact, semi-plantigrade, and not walking on the mere tips of the toes, like the other digitigrada.

DIGITIPARTITE, a. *dĭj′ĭ-tĭ-pâr-tīt* [L. *digĭtus*, a finger; *partītus*, divided—in allusion to the five fingers of the hand]: in *bot.*, applied to a leaf with five divisions extending to near the base; also called 'quinque-partite.'

DIGLENA, n. *dī-glē′na* [Gr. *dis*, twice, two-fold; *glēnē*, an eye-ball]: genus of *Rotatoria*, of the family *Hydatinæa*.

They have two eyes; frontal foot forked. There are no other appendages than the foot and the rotatory organ.

DIGLYPH, n. *dī′glĭf* [Gr. *digluphos*, having double sculptures—from *dis*, twice; *glupho*, I hollow out]: in *arch.*, a projecting face, like the triglyph, but having only two grooves on its surface.

DIGNE, *dēñ* [Lat. *Dinia*]: town in the dept. of the Basses-Alpes on the Bléonne, 60 m. of Marseille, occupies a picturesque situation upon a mountain slope, and is encircled by walls, but its streets are narrow, crooked, and steep, and the houses mean and squalid. Its chief building is the Préfecture, once the bishop's palace, a very ordinary edifice. The principal manufactures are articles of leather, and it has a trade in dried fruits, honey, wax, woolen and linen cloth, kid-skins, etc. In the neighborhood are several hot saline springs, temperature 104° F. Of Dinia, mentioned by Pliny, nothing remains. It is known that it embraced Christianity at an early period, and has given title to a bishop since the year 340. In 1629, a plague reduced the population of Digne from 10,000 to 1,500. Pop. 7,261.

DIGNIFY, v. *dĭg′nĭ-fī* [OF. *dignifier*—from L. *dignus*, worthy; *făcĭō*, I make: It. *dignificare*, to dignify]: to invest with honor; to exalt in rank; to promote. DIG′NIFYING, imp. DIG′NIFIED, pp. *-fīd:* ADJ. marked with dignity; noble; lofty. DIG′NITY, n. *-nĭ-tĭ* [F. *dignité*, a dignity—from L. *dignĭtātem*]: nobleness or elevation of mind; true honor; grandeur of mien; an office giving high rank with jurisdiction or power; the rank or title of a nobleman. DIG′NITARY, n. *-tér-ĭ*, in *prelatical churches*, a clergyman who holds an office in the church superior to a parochial clergyman; in present usage it includes not only bishops and deans, but also canons and prebendaries.—SYN. of 'dignify': to exalt; honor; elevate; advance; prefer; ennoble; adorn; illustrate;—of 'dignity'; loftiness; haughtiness; elevation; preferment; honor; elegance; impressiveness; decorum.

DIGRAPH, n. *dī′grăf* [Gr. *dis*, twice; *grapho*, I write]: a combination of two letters to express one sound, as *ph*=*f*, *ea* or *æ*=*e*, or *th* in bre*a*th.

DIGRESS, v. *dĭ-grĕs′* [L. *digressus*, a going away, a departure—from *dis*, *gressus*, a step: It. *digresso*]: *lit.*, to step or go out of the way, in speaking or writing; to depart from the main subject or design; to introduce unnecessary matter. DIGRES′SING, imp. DIGRESSED′, pp. *-grĕst′*. DIGRES′SION, n. *-grĕsh′ŭn* [F.—L.]: a departure from the main subject or design. DIGRES′SIONAL, a. pertaining to. DIGRES′SIVE, a. *-grĕs′sĭv*, departing from the main subject. DIGRES′SIVELY, ad. *-lĭ*.—SYN. of 'digress': to amplify; deviate; wander; expatiate; transgress.

DIGYN, n. *dī-jĭn′* [Gr. *dis*, twice; *gūnē*, a woman]: in *bot.*, a plant having two styles or pistils. DIGYNIAN, a. *dī-jĭn′ĭ-an*, or DIGYNOUS, a. *dĭj′ĭ-nus*, having two styles or pistils, as in the DIGYNIA, *dī-jĭn′ĭ-ă*.

DIHEDRAL, a. *dī-hē′drăl* [Gr. *dis*, twice; *hĕdra*, a side or face]: having two sides or surfaces. DIHE′DRON, n. a figure with two sides or surfaces.

DIHEXAHEDRAL, a. *dī-hĕks-a-hē′dral* [Gr. *dis*, twofold; Eng. *hexahedral*]: having the form of a hexahedral prism with trihedral summits.

DIHONG, *dē-hŏng′*, or SANPO′: largest feeder of the Brahmaputra. It rises on the n. side of the Himalayas, near the sources of the Sutlej and the Indus, lat. 30° 25′ n., and long. 82° 5′ e.; and bursts through that great mountain-chain near lat. 28° 15′ n., and long. 95° 10′ e., having pursued through Tibet an easterly course of about 1,000 miles. Finally, it joins the more easterly branch of the Brahmaputra, near the n.e. angle of Assam.

DIJON, *dē-zhōng′*: town of France, dept. of Côte d'Or; formerly cap. of the old duchy of Burgundy; lat. 47° 20′ n., and long. 5° 2′ e., about 195 m. s.e. of Paris by railway. Dijon occupies a most delightful situation in a fertile plain on the right bank of the Ouche, at the base of the vine-clad hills which produce the famous Burgundy wines. The environs are exceedingly beautiful. Dijon is surrounded by old walls, originally having but five gates; and the ramparts, tastefully planted with fine trees, furnish agreeable promenades. The town is for the most part well and regularly built, and the streets spacious and clean. Among public buildings, which are numerous and imposing, the chief are the cathedral, a massive Gothic structure, dating from the 13th c., with a tall wooden spire, above 300 ft. high; the church of Notre Dame, a noble specimen of the purest Gothic; the church of St. Michael, with a splendid renaissance front; the theatre, a handsome building, with a fine Corinthian portico; and the palace of the dukes of Burgundy, now used as the town hall, and much modernized externally, but possessing interiorly some of its earlier features, and containing a museum very rich in monuments of the middle ages, besides a library of 50,000 vols. and several hundred manuscripts. Dijon is also the seat of a university academy with three faculties—law, science, and letters—and possesses, in addition, a royal college, a theol. seminary, a botanic garden, and an acad. of art. The manufactures of Dijon consist of woolen cloth, blankets, hosiery, leather, vinegar, chemical products, etc.; and there are salt refineries, distilleries, and breweries; but the town is mainly dependent on its trade in the wines of Burgundy. Dijon dates from Roman times, its ancient name being *Dibio*. It came into possession of the Burgundians in the 5th c., and from them passed to the Franks. In the 9th c., it was ruled by counts of its own, under the suzerainty of the bishops of Langres. In the 11th c., it was united to the duchy of Burgundy, of which it became the capital, and the usual residence of the dukes, who rebuilt and greatly enlarged and improved it. In 1870, Oct., after a sharp engagement before the city, Dijon capitulated to a German

force. There was again severe fighting here, 1871, Jan. Pop. (1901) 71,326.

DIKAMALLI, *dĭk-a-măl'ĭ:* a gum-resin which exudes, in amber-colored transparent drops, from the ends of young shoots of *Gardenia* (q.v.) *lucida,* an Indian tree. It has a very powerful fragrance, and has been found extremely useful in hospitals, in keeping away flies, and especially as a dressing for wounds and running sores.

DIKE, or Dyke, n. *dīk* [AS. *dic;* Dan. *dige;* Dut. *dijck,* a mould, a ditch: Icel. *diki;* Sw. *dike;* F. *digue,* a bank: Gr. *teichos,* a wall, a rampart. *Dike* and *ditch* are really the same word, and from the same root—the *ditch* and the bank or *dike* being constructed by the same act, viz., digging]: long artificial mound or embankment of earth or stones to prevent low lands from being inundated by the sea or a river; a ditch; a wall: V. to surround with a barrier. Di'king, imp. Diked, pp. *-dīkt.*—The word *levée* is employed in France and the United States to signify this species of embankment, and since 1873 the word *jetty,* as applied to the method of improving the mouth of the Mississippi river, has borne the same general interpretation. The term dike also is applicable to breakwaters and dams. In no country has the construction of the dike been carried to such an extent as the Dutch Netherlands. A large part of Holland consists of meadow-land, formed of materials brought from Switzerland and Germany by the Rhine, and lying so low that it would be overflowed by the sea and the various branches of the Rhine during high tide if it were not protected, partly by natural sand hills, but more particularly by the remarkable system of diking that has excited the wonder of the world. These embankments resemble long mounds, broad at the base, gradual in slope, and often of sufficient width at the top to permit the construction of a canal or roadway or both. The base is frequently faced with masonry, and protected by great quantities of stones as well as by long rows of piles, six or seven feet above ground, connected by heavy timber ties, and filled in with fascines weighted with stones. In some instances the fabric is strengthened by the planting or the interweaving of willows as wicker-work on the sides of the dike. Carried along the banks of rivers, and in many places along the margin of the sea, as well as cross-wise in the interior, a singular net-work of embanking is presented, which answers the double purpose of a protection against inundation and a means of providing canals, by which superfluous water, pumped from the meadows, may be run off into the sea. One of the most gigantic dikes is that constructed along the Helder river. It is 6 m. long, 40 ft. broad at the crown, along which there is a good road, and descends into the sea by a slope of 200 ft. inclined about 40 degrees. Another is that of West Kappel, at the w. extremity of the island of Walcheren. In 1574, when Holland was struggling to throw off the Spanish yoke, the city of Leyden, under siege, was plunged into the horrors of famine. For seven weeks the citizens had no bread to

eat, and multitudes perished of hunger. In this emergency the Prince of Orange availed himself of the presence of the dikes, broke them down in several places, and thus flooding the country, drowned a great number of the Spaniards, and raised the siege of the city. In the United States, diking was confined to the construction of embankments along the Mississippi river to protect the cotton plantations against inundation at the periodical rising of the river till within a few years. About 1869 James S. Pike constructed a dike along a portion of the Hackensack and Passaic rivers in N. J., for the purpose of draining the vast Hackensack meadows. The plan he followed consisted in sinking large iron plates into the muck near the margin of the rivers, and facing and backing them with squares of turf. Since the completion of the work the meadows have become sufficiently drained to warrant the Pennsylvania railroad company erecting upon them a great roundhouse and a cluster of large shops for the manufacture of passenger and freight cars. The greatest work, however, in this line was the construction of the jetties at the s.w. pass bar of the Mississippi river by Capt. James B. Eads. The work was begun 1875, June, on a contract by which Capt. Eads bound himself to deepen the bar to 28 ft. In 9 months' time he secured a depth varying from 8 to 13 ft.; in 1879, July, he gained a depth of 30 ft.; and an official survey, 1884, July 1, showed the least depth through the jetties to be 34 ft. Capt. Eads began his work by driving a single line of guide-piles, 12 ft. apart, from the land's end of the e. bank of the pass to a 30 ft. water mark $2\frac{1}{4}$ m. off. Parallel to this and 1,000 ft. w. a second line of piles was driven to a point 4,000 ft. beyond the limit of the first. Mattresses made of willow, usually 100 ft. long, from 2 to 3 ft. in thickness, and from 20 to 50 ft. wide, according to their location in the works, were then towed to the lines of piles and sunk by means of a ton or two of stone placed evenly upon them. At the bottom the mattresses rapidly filled with sediment and became immovable. They formed a foundation 35 ft. wide, 2 ft. thick, $2\frac{1}{4}$ m. long on the e. jetty, and 7,800 ft. long on the w. jetty. A second course 30 ft. wide, and a third 25 ft. wide were similarly placed, and a revetment of stone was subsequently placed several ft. thick over all the willows where they were not imbedded in deposit. Cribs, constructed of palmetto logs and filled with stone, were placed wherever an unusual force of water might endanger the jetties. Where the mattresses had become thoroughly settled they received a capping of concrete blocks. According to Cap. Eads's prediction before beginning the work, the channel is being constantly improved by the action of the water, and the sea-bottom beyond the jetties, where numerous engineers believed a new bar would be formed, is being deepened by the same agency.

DIKE, or DYKE, in Geology: rents frequent in volcanic districts, filled with molten materials from below, which materials subsequently solidify, and form solid walls.

filling the fissures, and separating the edges of the disjointed strata. To these walls, geologists apply the term dike, Scottish for a wall or fence. Similar walls of intruded matter occur in stratified rocks of all ages, and have been connected with volcanic eruptions belonging perhaps to every geological epoch. They consist of similar materials to whatever period they belong—viz., lava, either in a granular, compact, or glassy condition. The dikes connected with Vesuvius have been minutely described. Those in the great escarpment which Somma presents to the modern crater of Vesuvius permit of careful examination. They are chiefly vertical, and traverse at right angles the beds of lava, scoriæ, breccia, and sand which form the ancient cone. They project in relief several inches, sometimes several ft., from the face of the cliff, being extremely compact, and less destructible than the intersected tuffs and porous lavas. In vertical extent thev vary from a few yards to 500 ft., and breadth from one to 12 ft. Many of them cut all the inclined beds in the escarpment from top to bottom, others stop short before they ascend above half-way, and a few terminate at both ends, either in a point or abruptly. In mineral composition, they scarcely differ from the lavas of Somma. Their texture is different at the edges and in the middle; toward the centre, the rock is larger grained, while at the edge it is always finer grained, sometimes vitreous. This evidently arises from the rate of cooling, it being known that molten trap or lava, when suddenly cooled, assumes a vitreous structure, while a slow cooling, as it permits the mass to remain in a condition fitted for the operation of the crystalline force, and the segregation of the separate materials, produces a more or less granular structure, in proportion to the time occupied in cooling. The rock forming the dikes is far more compact than that of ordinary lava, for the pressure of a column of melted matter in a fissure greatly exceeds that in an ordinary stream of lava; and pressure checks the expansion of those gases which form vesicles in lava. When the fissures have been openings for the egress of molten matter, the surfaces have been worn and smoothed by the current, the intense heat having melted all projections and obstructions to the passage of the incandescent fluid.

The appearances of ancient trap-dikes are very similar to those of recent volcanic dikes. Trap-dikes generally are prominent objects in the landscape, because, while the softer rocks through which they have intruded have been abraded by the sea, rivers, or rain, they, being more compact, stand out in the face of precipices or on the level surface of a country. Sometimes, however, from chemical action, chiefly from the oxidation of the iron which all trap rocks contain to a greater or less extent, the intruded dike decomposes more rapidly than the containing rock. It then for some feet or yards leaves the original fissure again unoccupied. A singular modification of this arrangement may sometimes be noticed, when the intruded igneous rock has so indurated the beds through which it passed as to

make them less liable to weather than the unaltered portions of the beds, or than even the dike itself. In such cases, we find two parallel walls of indurated strata rising above the general level of the country, and forming the banks of a ditch produced by the disappearance of so much of the dike. All these appearances may be observed in the island of Arran, Scotland, a locality unsurpassed for observing those remarkable geological phenomena. Some dikes have had no apparent influence on the adjoining strata, even when these consist of materials most liable to be affected by heat. Thus seams of coal sometimes remain unaltered, though in contact with the supposed injected molten matter. Considerable doubt is thus cast upon the generally received opinion, that in all cases dikes were intrusions of lava. The effects that have been produced in numerous instances can, however, be accounted for only by supposing that the adjacent rocks have been affected by heat. It has been observed in Arran, at a place where a dike cut at right angles an older one one, that the edges of the older dike, which had been acted upon by the current of liquid lava, were converted into true obsidian to the depth of nearly half an inch. In Anglesea, shale at the edge of a dike 134 ft. wide has been converted into hard porcellaneous jasper; and argillaceous limestone loses its earthy texture, and becomes granular and crystalline. The chalk, in Antrim, is converted, by basaltic dikes, into granular marble. Coal, as might have been expected, is often altered in an extraordinary degree. Witham describes the effects of the Cockfield Fell dike on a seam of coal through which it passes. It is a nearly vertical wall of trap, 18 or 20 yards thick. The coal is 6 or 8 ft. thick, and is affected about 50 yards from the dike. It first loses the calcareous spar, and then its quality for burning. As it comes nearer, it becomes a half-burnt cinder, then a real cinder, and finally, in contact with the dike, a black substance resembling soot caked together. The coal thus deteriorated is 25 yards of bad short coal, half reduced to cinder; 16 yards of cinder; and 10 of sooty substance; and is reduced at last to 9 in. thickness.

Non-volcanic igneous eruptions, that is, having no connection with volcanoes, are signally illustrated in the geology of N. America; and though the term igneous is applied to the intruded material, such as trap, basalt, trachyte, etc., it must not be understood as meaning necessarily that the material was molten, for it might have been in a wet, pasty condition, though hot enough to transform adjacent rock. The condition was probably molten in the great series of dikes of the eastern Triassic sandstones, beginning conspicuously with Mt. Holyoke and Mt. Tom in w. Mass., and continued numerously in Conn., including the Hanging Hills of Meriden, and East and West Rock, New Haven; reappearing in the Palisades, and extending s.w. through New Jersey. Many of the dikes curve to the w., the trap having apparently wedged apart the beds of the sandstone, which, in New England, dip

about 23° to the east; the result would be a curve as when rock is scaled off by a wedge. Denudation (q.v.) has removed great beds of softer rock, leaving the trap standing with a bold front, which shows a tendency to the columnar structure, better seen along the Columbia river and in the Giant's Causeway and Fingal's Cave. Dikes were formed on a great scale during the earlier (close of the Lower Silurian) disturbances in the L. Superior region; the native copper occurs often at junction of the dikes with the country rock. The greatest non-volcanic eruptions, and forming not only dikes but vast overflows, dating from the Cretaceous, Tertiary, and Quaternary, took place in the Rocky Mt. region and on the Pacific slope. The more porous, pumice-like trachyte, such as (of beautiful colors) is used for building at Denver, was a sub-marine eruption undoubtedly. At Gothic Mountain, Colo., 2,000 feet of trachyte cap Cretaceous strata, showing a dike conduit.

DIKOWA, *dē-kow'â*, or DEEGOA, *dē-gō'â:* large town of Bornu, central Africa, about 30 m. s.w. of Lake Tchad. It is in a great cotton-growing district, and has considerable trade. The spinning and weaving of cotton are extensively carried on. The houses are mostly of clay, but each has its court-yard. Pop. supposed about 30,000.

DILACERATE, v. *dī-lăs'ėr-āt* [L. *dis*, apart; *lacerātus*, torn]: to tear or rend; to force in two. DILAC'ERA'TION, n. *-ā'shŭn*, a tearing or rending.

DILAPIDATE, v. *dĭ-lăp'ĭ-dāt* [L. *dilapĭdātus*, squandered, wasted—from *dis*, *lapĭdem*, a stone: It. *dilapidare:* F. *dilapider*]: to fall into decay; to go to ruin; to waste or destroy, applied to buildings. DILAP'IDATING, imp. DILAP'IDATED, pp.: ADJ. wasted; suffered to go to ruin. DILAP'IDA'TION, n. *-dā'shŭn* [F.—L.]: destruction; demolition; decay; ruin. In *English law*, applied especially to ecclesiastical buildings. Dilapidate exists where an incumbent suffers his parsonage-house or outhouses to fall down, or be in decay, for want of necessary reparation; or pulls down or destroys any of the outhouses or buildings belonging to his living; or destroys woods, trees, etc.; for it is said to extend to committing or suffering any wilful waste on the inheritance of the church.—Stephens's *Eccl. Law*. Dilapidate is a species of the legal injury known as Waste (q.v.). A rector or vicar is bound to keep his residence and the chancel of the church in repair, but not to supply or maintain anything in the way of ornament, as painting, white-washing, or papering.

DILATE, v. *dī-lāt'* [F. *dilater*—from L. *dilātus*, spread abroad—from *dis*, apart; *lātus*, carried, borne]: to spread out; to expand in all directions; to enlarge; to dwell on in narration. DILA'TING, imp. DILA'TED, pp. DILA'TABLE a. *-tă-bl* [F.—L.]: elastic; capable of expansion. DILATATION, n. *dĭl'ă-tā'shŭn* [F.—L.], or DIL'ATABIL'ITY, n. *-bĭl'ĭ-tĭ* [F. *dilatabilité*]: the act of expanding; a spreading or extending in all directions; expansion. DILATORY, a. *dĭl'ă-tėr-ĭ*, slow; tardy; sluggish; not proceeding with

diligence; tending to delay. DILATORY PLEAS: see PLEA. —DIL′ATORILY, ad. *-lĭ*. DIL′ATORINESS, n. DILA′TOR, n. *dī-lā′tẽr*, that which widens or expands—applied to a muscle.—SYN. of 'dilate': to expand; extend; distend; swell; spread out; amplify; expatiate; grow wide; descent; —of 'dilatory': procrastinating; slow; backward; delaying; sluggish; inactive; loitering; behindhand; lingering; tardy.

DILEMMA, n. *dĭ-lĕm′mă* [Gr. *dilemma*, a double proposition—from *dis*, twice; *lemma*, anything received, an assumption—from *lambanō*, I take]: any difficult or doubtful choice; an argument in which one is caught between two difficulties; a state of perplexity how to decide; in *logic*, an argument equally conclusive by contrary suppositions. A true dilemma is defined by Whately as 'a conditional syllogism with two or more antecedents in the major, and a disjunctive minor.' The following dilemma, of the kind called destructive, will perhaps convey a clearer notion than any definition. 'If this man were wise, he would not speak irreverently of Scripture in jest; and if he were good, he would not do so in earnest; but he does it, either in jest or in earnest; therefore, he is either not wise, or not good.' There being two conclusions, one or other of which the opponent must admit, he is in a manner caught between them; hence we speak of the *horns* of a dilemma.

DILETTANTE, n. *dĭl′ĕ-tăn′tā*, DIL′ETTAN′TI, n. plu. *tē* [It.—from *dilettare*, to delight in a subject—from L. *delectārĕ*, to delight]: an admirer or lover of the fine arts; an amateur; a dabbler. DIL′ETTAN′TEISM, n. *-tĕ-ĭzm*, the quality of being a dilettante; affectation of a knowledge of art. DILETTANTE in its original sense, is synonymous with *amateur*, or lover of the fine arts. It is often used as a term of reproach, to signify an amateur whose taste lies in the direction of what is trivial and finical; or a critic or connoisseur whose knowledge is mere affectation and pretense. It is sometimes assumed, in a spirit of self-depreciation, by those who are unwilling that their critical acquirements, or artistic productions, should be judged by the rules which would be applied to those of persons who had made a professional study of art. In this sense it was assumed by the Dilettanti Society.—DILETTANTI SOCIETY, body of noblemen and gentlemen by whose exertions the study of antique art in England has been largely promoted; the Society was founded 1734, and held its meetings at the Thatched House Tavern in St. James's Street, London. In its beginnings it was simply an amateur club, its object being to combine social and friendly intercourse with the cultivation of artistic knowledge and the gratification of artistic tastes. When its funds had accumulated to a large amount, its members, numbering abt. 60, fitted out, 1804, an expedition for collecting details and drawings of the most remarkable artistic monuments of antiquity; selecting for this undertaking, Mr. Chandler of Magdalen College, Oxford, editor of the *Marmora Oxoniensis;* Mr. Revett and Mr. Stewart, authors of the magnificent work

on Athenian Antiquities; and Mr. Pars, a talented young artist. They spent two years in Greece, and returned, bringing materials for two splendid vols. on the Antiquities of Ionia, published at the expense of the Society. Architecture had been the first object of their inquiries, but their attention was turned to sculpture, then at the lowest ebb in England. A series of engravings from the finest antique statues, bas-reliefs, and busts, appeared 1809, with dissertations by Payne Knight. In 1811, a second architectural exploring-party was dispatched by the Soc. of Asia Minor, consisting of Mr. (afterwards Sir William) Gell, Mr. Bedford, and Mr. Gandy. Two vols. were issued, one 1817, *The Unedited Antiquities of Attica;* a second, *Antique Sculpture*, 1835.

DILIGENCE, n. *dĭl′ĭ-jĕns* [F. *diligence*—from L. *diligĕntĭăm*, carefulness—from *dis*, apart; *legĕrĕ*, to choose: It. *diligenza*]: steady application: industry; assiduity; in *Scot.*, care incumbent on parties to a contract; also, warrants by courts for enforcing attendance of witnesses and production of documents; also a process of law by which a person or his property may be seized for debt (see EXECUTION). DIL′IGENT, a. *-jĕnt* [F.—L.]: steady effort to accomplish what is undertaken; attentive; not idle; industrious. DIL′IGENTLY, ad. *-lĭ.*—SYN. of 'diligence': constancy; attention; heed; heedfulness; caution; care; sedulousness; activity; assiduousness; labor; perseverance.

DILIGENCE, n. *dĭl′ĭ-zhângs* [F.: see DILIGENCE 1]: French stage-coach. It is a huge strong-built vehicle, with four broad wheels; weighs about five tons, and is drawn by four stout horses, at the rate of about six miles an hour. It consists of three chief compartments: the front, called the *coupé*, for three persons; the second, called the *intérieur*, for six persons; and, lastly, the *rotonde*, entered from behind, for six persons. Aloft, in front, is the *banquette*, where the *conducteur* is seated; and behind this, underneath a thick leather covering, passengers are sometimes huddled among luggage and goods, with little regard to their comfort. All the places in the body of the vehicle are numbered, and assigned in the order of booking. Usually, an effort is made to be booked early, in order to secure corner-places. In booking, it is customary to pay only a portion of the fare, called *arrhes;* the remainder being paid at the end of the journey. For the arrhes, a receipt or bulletin ought to be given. Without this security, a traveller may be put down half-way and cheated out of his fare, or he may be compelled to pay over again. The driver being concerned only with the horses, the entire management of the vehicle, including the charge of the drag or break, devolves on the conducteur, a trustworthy but most dictatorial personage, dressed in a blue cloth jacket and cap, and having a badge on his breast indicative of his dignity. The greater number of the diligences in France belong to two companies in Paris—the *Messageries Impériales* and the *Messageries Générales*. The system of diligences, however, has been latterly much broken up by railway transit.

DILKE, *dĭlk*, Sir Charles Wentworth: b. Chelsea, England, 1843, Sep. 4; statesman and author. He graduated at Trinity College, Cambridge, 1866, was called to the bar the same year, and soon afterward spent several months travelling in Canada and the United States and then visited New Zealand, Tasmania, all the Australian colonies, Madras, Calcutta, Lahore, Bombay, and Egypt, making a complete circuit of the globe. On his return to England he published *Greater Britain: a Record of Travel in English-speaking Countries during* 1866–67, 2 vols. (1868). In 1868 he was elected to parliament as a radical, and though professing a preference for a republican form of govt. over a constitutional monarchy was unsuccessfully opposed for re-election 1874. In 1875 he published the works of his grandfather, Charles Wentworth Dilke, with a memoir, under the title of *Papers of a Critic*, and made a second trip round the world. He was appointed under sec. of state for foreign affairs by Mr. Gladstone 1880, May; was chairman of the royal commission for the negotiation of a commercial treaty with France 1881–2; pres. of the local govt. board 1882; chairman of the royal commission on the housing of the working classes 1884; was returned to parliament 1885, but defeated 1886 on account of his connection with the celebrated Crawford divorce case, the decision of which reflected seriously on himself. He then devoted his attention to his literary interests, being proprietor of the *Athenæum* and *Notes and Queries*, and published *Present Position of European Politics* (1887); *Problems of Greater Britain* (1890); *Imperial Defense* (with Spencer Wilkinson, 1891): *British Empire* (1898). His chief legislative achievements were the creation of school boards directly elected by the taxpayers, the conferring of the municipal franchise on women, the abolition of the barbarous penalty of drawing and quartering, and the extension of the hours of balloting at parliamentary elections in the metropolis by the measure known as Dilke's Act. In 1892 he was again elected to parliament by a large majority.

DILKE, Emilia Frances Strong, Lady, English art critic: b. Ilfracombe 1840, Sep. 2; d. 1904, Oct. She was married to Mark Pattison in 1862 and to Sir C. W. Dilke (q.v.) in 1885. She was for many years a writer for the *Saturday* and *Westminster* reviews, and at one time art critic of the *Academy*. Her chief work is *The Renaissance in France* (1879). Her other publications include: *The Shrine of Death* (1886); *Art in the Modern State* (1888); *The Shrine of Love and Other Stories* (1891); *French Painters of the 18th Century* (1899); *French Architects and Sculptors of the 18th Century* (1900); *French Decoration and Furniture in the 18th Century* (1901).

DILL, n. *dĭl* [AS. *dile*, anise: Sw. *dill;* Dan. *dild;* prov. Dan. *dull*, still, quiet: Icel. *dill*, the nurse's lullaby], (*Anethum*): genus of plants of the nat. ord. *Umbelliferæ*, having compound umbels without general or partial involucres, the border of the calyx minute but 5-toothed, yellow involute petals, and dorsally compressed lenticular fruit. The

Common Dill (*A. graveolens*) is an annual or biennial plant, which grows wild in cornfields in the East and in the countries around the Mediterranean, but is quite hardy in Britain. It has from a very early period been in general cultivation as an aromatic, stimulant, and carminative. It has a stem 1–4 ft. high, bearing at top a flat umbel of 10–30 rays; the leaves much divided, and the final segments thread-like. It has a strong peculiar aromatic smell and taste; the leaves are sometimes used for flavoring pickles, sauces, etc. The fruit (*Dill seed*) is used in medicine, chiefly for relief of flatulence and griping in infants, and is administered in the form of *Dill Water*, in the preparation of which *Oil of Dill* is employed; a pale-yellow essential oil, on which the properties of the plant depend, and which is obtained by distillation.—Sowa A. (*A. Sowa*) is a native of Bengal, much cultivated in the E. Indies for its fruit, which is variously used in medicine and flavoring. It is a common ingredient in curries. The plant resembles Common Dill, but its flavor is stronger. Dill, v. to become inactive. To dill down, to subside; to become still.

DILL, James Brooks, American corporation lawyer: b. Spenceport, N. Y., 1854, July 25. He was graduated at Yale in 1870, and from the law school of the University of the City of New York 1878. He has drafted, in whole or in part, the charters of more than 700 corporations and has written various monographs on matters connected with corporation law, among them: *The Advantages of Business Corporations.* It was at his suggestion that New Jersey adopted the Corporation Registration Law, which gave New Jersey corporations the same protection afforded by the English system. See Corporations.

DILLENIACEÆ, *dĭl-lē′nĭ-ā′sē-ē*, or Dille′niads, *-ădz* [after J. J. *Dillenius*, prof. of botany at Oxford Univ.]: natural order of exogenous plants, chiefly trees, shrubs, or half-shrubby plants, natives of tropical and subtropical regions, allied in structure and habit to *Magnoliaceæ*. They have usually alternate leathery leaves, without stipules. The 200 known species are generally astringent, and useful as medicine; have magnificent foliage and flowers.

DILLING, n. *dĭl′lĭng* [comp. Gael. *diall*, fondness; *dile*, love]: a darling or favorite; the youngest child; the youngest of a brood.

DILLINGHAM, William Paul, American statesman: b. Waterbury, Vt., 1843, Dec. 12. He studied law, was admitted to practice in 1867, and was state attorney, Washington co., Vt., 1872–6. He was a member of the Vermont legislature 1876 and 1884; state senator 1878 and 1880; commissioner of State taxes 1882–8, and governor of Vermont 1888–90. Since 1890 he has been president of the Waterbury National Bank. He was elected United States senator in October 1900 to fill a vacancy caused by the death of Justin S. Morrill.

DILLMAN, *dĭl'mân*, August: 1823, Apr. 25—1894, July 4: German theologian and orientalist. Studied theology at Tübingen under Ewald, remaining as tutor and prof. till 1854, when he went to Kiel; and 1860 was made prof. Oriental languages there; 1864 prof. Old Testament exegesis at Gieszen, and held the same chair at Berlin 1869. His works on Ethiopic language and literature are authorities.

DILLON, *dĭl'on*, John: 1851————————; b. Blackrock, Ireland: political agitator; son of John Blake Dillon, one of the leaders in the abortive insurrection of 1848. Dillon was educated at the Rom. Cath. Univ., Dublin; afterward studied surgery and took his degree; but never practiced, having devoted himself to the service of his country. He accompanied Parnell to the U. S. 1879, remaining more than a year, obtaining material aid for the Irish national cause. During his absence Dillon was elected member of parliament for Tipperary. He was the first of the leaders to be cast into prison 1881; released after a brief detention, he was imprisoned again, till 1882, May. His health having been broken down, he resigned his seat and made a tour of the U. S. and Australasia. On his return he was elected to parliament from East Mayo 1885, re-elected 1886 and 92. He was imprisoned for 5 months in 1888 for political offenses, and 5 months in 1891. In 1891 he repudiated Parnell's leadership. Dillon was author of the 'plan of campaign,' a compact among tenants on an estate to coerce the landlord by pooling and withholding the rents. In 1896 Dillon was elected chairman of the anti-Parnellite section of the Irish nationalist party.

DILLON, John Forest, American lawyer: b. Montgomery co., N. Y., 1831, Dec. 25. Going to Iowa in early youth, he was graduated at the medical department of Iowa University, but soon gave up medical practice and studied law, being admitted to the bar in 1852. He was State prosecuting attorney 1852–8; judge of the supreme court of Iowa 1863–9; and judge of the United States circuit court, 8th judicial district, 1869–79, when he resigned. From 1879–82 he was professor of real estate and equity jurisprudence in Columbia Law School, and has since then practiced law in New York, being general counsel of the Missouri Pacific Railway Company; and the Western Union Telegraph Company; and consulting counsel of the Manhattan Elevated and Pacific Railway companies. Among his works are: *United States Circuit Court Reports; Municipal Corporations; Removal of Causes from State to Federal Courts; Municipal Bonds;* and *Laws and Jurisprudence of England and America.*

DILLY-DALLY, v. *dĭl'lĭ-dăl'lĭ* [from *dally*]: to delay; to trifle; to loiter.

DILOGY, n. *dĭl'ŏj-ĭ* [Gr. *dilogia*, repetition]: a figure of speech in which a word is used in an equivocal sense; an expression which may have two meanings.

DILUTE, v. *dĭ-lôt'* [L. *dilūtus*, washed away, weakened —from *dis*, *lūtus*, washed: It. *diluire:* F. *diluer*]: to weaken or make thinner; to reduce the strength of, as with water. DILU'TING, imp. DILU'TED, pp.: ADJ. made thinner or weaker. DILU'TER, n. that which, or he who. DILUENT, n. *dĭl'ū-ĕnt*, that which thins or weakens the strength of. ADJ. weakening the strength of by mixing with water; attenuating. DIL'UENTS, n. plu. weak drinks, usually of water, whey, etc., used medicinally to thin the blood and increase the quantity of the excretions. The best *general* diluent is water: see DEMULCENTS.—DILUTION, n. *dĭ-lô'-shŭn*, the act of making thin or more liquid.

DILUVIAL, a. *dĭ-lô'vĭ-ăl*, or DILU'VIAN, a. *-ăn* [L. *dilūvĭŭm*, a deluge—from *dis*, asunder; *lŭō*, I wash: It. *diluvio*]: pertaining to the flood or deluge in the days of Noah; effected or produced by a deluge; in *modern usage*, accumulations of gravel or angular stones, produced by extraordinary currents of water. DILU'VIUM, n. *-ŭm*, a great accumulation or deposit of earth, sand, etc., brought together by the action of great bodies of water; formerly in *geol.*, strata believed to have been formed by the Deluge; particularly the bowlder clay (q.v.). The altered opinions as to the origin of these beds have caused the word to fall into disuse. Accumulation of matter by the ordinary operation of water is termed ALLUVIUM, which see. DILU'VIALIST, n. *-ăl-ĭst*, one who ascribes to a universal deluge the bowlder-clay, the abraded and polished rock surfaces, ossiferous gravels, and similar phenomena on the earth's surface.

DIM, a. *dĭm* [from *dam*, in the sense of stop, obstruct: Bav. *daum*, a stopper: Icel. *dimmer*, dark, thick: Sw. *dimba*, a fog, a haze]: obscure; imperfectly seen or discovered; somewhat dark; tarnished; faint; vague: V. to cloud or obscure; to make less bright; to lessen the powers of vision; to sully or tarnish. DIM'MING, imp. DIMMED, pp. *dĭmd*, obscured. DIM'LY, ad. *-lĭ*. DIM'MISH, a. *-ĭsh*, somewhat dim. DIM'NESS, n. want of brightness; obscurity of vision. DIM-SIGHTED, having weak vision.—SYN. of 'dim, a.': dark; gloomy; dusky; mysterious; imperfect; dull; sullied; indistinct.

DIMA, *dē'mâ:* large town of Abyssinia, in the state of Amhara, on an affluent of the Abai, 150 m. s.s.e. of Gondar. The houses are mostly of stone, and the church is one of the largest edifices in Abyssinia. The town is divided into many quarters by stone walls.

DIMARIS, n. *dĭm'â-rĭs* [a word without etymological meaning but designed to have its letters symbolic]: in logic, the third mode of the fourth figure of syllogisms. See SYLLOGISM AND MOOD IN LOGIC.

DIMATIS, n. *dĭm'-ă-tĭs*. See DIMARIS.

DIME, n. *dīm* [F. *dime*, tithe—from OF. *disme*—from It. *decima;* L. *decĭmus*, the tenth]: in *United States*, a silver coin equal to one-tenth of a dollar, or ten cents,: see DOLLAR.

DIMENSION, n. *dĭ-mĕn′shŭn* [F. *dimension*—from L. *dimensĭōnem*, a measuring—from *dis*, *mētĭŏr*, I measure: It *dimensione*]: measured extent or size of a body: capacity or bulk; extent.—In geometry, a line whether straight or curved, has only one dimension, or measurement—namely, length; a surface has two—length and breadth; a solid has three dimensions—length, breadth and thickness, or depth. These three measurements or dimensions determine all forms of extension.—In algebra, the term dimension is applied in much the same sense as *degree*, to express the number of literal factors that enter into a term. Thus, x^2, xy, $2ab$, are all of two dimensions, or of the second degree; x^3, x^2y, abc, $\frac{a^2bc}{d}$, are of three dimensions, etc. DIMEN′SIONED, a. *-shund*, having dimensions.

DIMEROUS, a. *dĭm′ĕr-ŭs* [Gr. *dis*, twice; *mĕros*, a part]: in *bot.*, composed of two pieces; having parts arranged in twos.

DIMETER, a. *dĭm′ĕ-tĕr* [Gr. *dis*, twice; *mĕtron*, a measure]: having two poetical measures.

DIMETRIC, a *dĭ mĕt′rĭk* [Gr. *dis*, twice; *mĕtron*, a measure]: said of crystals when they have axes of two kinds, the vertical being unequal to the lateral.

DIMIDIATE, a. *dĭ-mĭd′ĭ-āt* [L. *dimidĭŭm*, the half]: half; in *bot.*, split into two on one side, as the calyptra of some mosses; seemingly imperfect, as a stamen whose anther has only one lobe, or a leaf whose limb is fully developed on one side of the mid-rib, and scarcely at all on the other. DIMIDIATION, in *heraldry*, mode of marshalling arms, adopted chiefly before quartering and impaling according to the modern practice came into use, and subsequently retained to some extent in continental though not in English heraldry. It consists in cutting two coats of arms in half by a vertical line, and uniting the dexter half of the one to the sinister half of the other. Coats of husband and wife were often so marshalled in England in the 13th and 14th c. Mr. Planché traces the double-headed eagle of the German empire to a dimidiated coat, with half an eagle for the e., and another half for the w. empire.

DIMINISH, v. *dĭ-mĭn′ĭsh* [F. *diminuer*—from L. *diminu′ĕrĕ*, to break into small pieces; *diminu′tus*, broken into small pieces—from *dis*, *minŭō*, I lessen]: to make smaller by breaking off a piece; to lessen; to make or become less or smaller; to impair; to appear less; to abate; to subside. DIMIN′ISHING, imp. DIMIN′ISHED, pp. *-ĭsht*. DIMIN′ISHABLE, a. *-ă-bl*, capable of being reduced in size. DIMIN′ISHINGLY, ad. *-lĭ*. DIMIN′UEN′DO, n. *-ū-ĕn′dō* [It]: in *music*, gradual lessening of the sound from loud to soft; it can be applied to a long note as well as to a passage of many notes. It is so nearly of the same meaning as decrescendo, that it is frequently marked with the same sign, thus >. DIM′INU′TION, n. *-ĭ-nū′shŭn* [F.—L.]:

the act of lessening or making smaller; the state of becoming or appearing less; decrease. In *heraldry, diminution* sometimes denotes indifferently, differences, marks of cadency, and brisures. DIMIN'UTIVE, a. *-mĭn'ū-tĭv*, small; little; contracted; narrow: N. a word expressing a little thing of the kind. DIMIN'UTIVELY, ad. *-lĭ*. DIMIN'UTIVENESS, n. the quality of being diminutive; want of bulk; smallness.—SYN. of 'diminish': to abate; decrease; liquidate; reduce; degrade; abase; subtract;—of 'diminution': decay; deduction; abatement; reduction; abasement; inaccuracy; defect.

DIMIN'UTIVES: forms of words, chiefly of substantives, in which the primitive notion has become lessened or diminished, as *hillock = a little hill.* With littleness is associated the idea of neatness, and also of needing protection; hence diminutives are used as terms of endearment; sometimes they imply contempt. There is perhaps no language without diminutives; and the most common method of formation is by the addition of a syllable. This, however, is not the only method; *tip* from *top,* by attenuating the vowel, and *kid* from *goat,* are as genuine diminutives as *hillock.* The commonest of the English diminutive affixes are *ock, kin, el,* or *le,* which are of Gothic origin, and *et* or *let,* of classical origin; as in *bullock, lambkin, kernel* (little corn), *lancet.* According to Dr. Latham, the termination *ling,* or rather *ing,* was originally patronymic; 'Ida was the son of Eoppa,' was expressed in Anglo-Saxon by *Ida wæs Eopping.* From the notion of the filial relation, the transition is easy to that of littleness and endearment, as in *darling, duckling.* Contempt predominates in *shaveling* (a monk) and others.

Diminutives occur often in proper names: *Perkin* is the diminutive of *Peter, Jenkin* of *John.* These have settled down into permanent and distinct names; but in the language of fondness and familiarity, *Charles* becomes *Charley, John, Johnny,* etc. In Lowland Scotch, this form of diminutive is not confined to proper names, but is applied to every object, animate or inanimate—*laddie, horsie, wifie, firie.* Sometimes one diminutive affix is joined to another as *lassock, lassockie;* and in expressions like *a wee, wee bit horsikie,* the diminution is carried to the fifth degree. It is principally in the mouths of the people and in friendly familiarity that these diminutive forms are common; and some languages and dialects are rich in them beyond others. Italian is remarkable in this respect, especially the Tuscan dialect: *casa,* house, becomes *casarella,* little house, and *casarellina,* pretty little house; from *fratello,* brother, which is itself a diminutive of the Lat. *frater,* children, it is said, may be heard forming such fond names as *fratellinucciettinetto.* The affectionateness and bonhomie of the Germans expresses itself largely in this form; *vater,* father, becomes *väterchen,* dear father, and even the pronoun *du,* thou, is made into *duchen,* and *duli.*

Diminutives are not confined to nouns: *whitish* is the diminutive of the adjective *white;* and *tipple, scribble, dan-*

dle are examples of diminutive verbs. Opposed to diminutives are AUGMENTATIVES, which abound in the Romanic languages, especially in Italian, and express not only largeness, but coarseness and vulgarity; *casoṭta* is a large house; *cavallaccio*, a worthless horse. Our word *balloon*, which is of foreign origin, is of this form, and means a large ball. Such words as *drunkard*, *braggart*, *buzzard*, seem to be genuine English augmentatives.

DIMISSORY, a. *dĭm'ĭs-sẽr-ĭ* [L. *dimissōrĭŭs*, giving leave to go before another judge—from *dimissus*, sent away, dismissed—from *dis*, away; *missus*, sent: It. *dimissorio*]: granting leave to depart; that by which a man is dismissed to another jurisdiction. LETTERS DIMISSORY, the authority given by his own bishop to a candidate for holy orders to be ordained by the bishop of another see.

DIMITRY, CHARLES PATTON, American novelist: b. Washington, 1837, July 31. He was educated at Georgetown College, and after serving as a private in the Confederate army, was connected with newspapers in several cities of the North and South. He is State historian of the Louisiana Society of the American Revolution. Among his works are: *Guilty or not Guilty; Angela's Christmas; Gold Dust and Diamonds; The House in Balfour Street; Louisiana Families; Louisiana Story in Little Chapters.*

DIMITRY, JOHN BULL SMITH, American author and editor: b. Washington, D. C., 1835, Dec. 27.; d. New Orleans 1901, Sep. 7. He entered the Confederate army of Tennessee in 1861, serving till 1864, being wounded at the battle of Shiloh. He resided in the United States of Colombia 1874–6, filling the position of professor of languages in the Colegio Caldas, Barranquilla. He was long connected with the press, being for seven years dramatic and literary editor of the New Orleans *Times*, and wrote a *History and Geography of Louisiana* which has been used as a text-book.

DIMITY, n. *dĭm'ĭ-tĭ* [Gr. *dimitos*, made with a double thread—from *dis*, twice; *mitos*, a thread—originally a stuff woven with double threads—with as much probability derived from *Damietta*, Egypt, where presumed to have been first made]: stout figured cotton-fabric, with the figure or stripe raised on one side, and depressed on the other, so that the two faces present reversed patterns. Dimity is commonly white, or of a single color; but variegated dimities are now made, the pattern and the ground of different colors.

DIMORPHANDRA, n. *dī-mawr-făn'dra* [Gr. *dimorphos*, two-formed; *anēr*, a man, used by modern botanists for a stamen]: genus of *Cæsalpinieæ*, typical of the tribe *Dimorphandreæ*.

DIMORPHANTHUS, n. *dī-mawr-fănth'ŭs* [Gr. *dimorphos*, two-formed; *anthos*, a flower; so named because there are flowers of two kinds, some producing seeds while others do not]: genus of the order *Araliaceæ*. *D. edulis* is employed in China as a sudorific.

DIMORPHINA, n. *dī-mawrf′ĭ-na* [Gr. *dis*, twice; *morphē*, form]: a hyaline foraminifer, in which the early chambers have the alternate growth of a Polymorphina, and the later ones the linear arrangement of a Nodosaria.

DIMORPHISM, n. *dī-mŏr′fizm* [Gr. *dis*, twice; *morphē*, a form]: the property of certain salts to assume two different forms of crystallization; in *bot.*, the occurrence of the same species of plant in two states. DIMOR′PHOUS, a. *-fŭs*, or DIMOR′PHIC, a. *-fĭk*, having the quality of dimorphism; in *bot.*, assuming two forms—in flowers, having long stamens and a short pistil in one, while in another there is a long pistil and short stamens, etc., but differing in no other appreciable way. In *chem.*, applied to a substance having the property of crystallizing in two distinct forms or systems: see CRYSTALLOGRAPHY. Thus, sulphur, as found crystallized naturally, and as obtained by the spontaneous evaporation of its solution in bisulphuret of carbon, or in chloride of sulphur, presents itself in crystals of the form of octohedra, with a rhombic base, and thus belongs to the *prismatic system;* but when sulphur is heated to fusion, and then slowly cooled, prismatic crystals of an amber color are obtained, which belong to the *oblique system.* The latter form of sulphur is not permanent, and the crystals gradually become opaque, and pass into the form of numberless octohedra. In their turn, the octohedral crystals, when kept at a temperature of 230° F. for some time, pass into the prismatic form. Carbon is another illustration of *dimorphism.* Thus carbon crystallizes in the diamond in the regular system as the octohedron and allied forms; while in the condition of graphite or Black Lead (q.v.), as obtained by the cooling of its solution in fused cast iron, it is in the form of hexagonal crystals belonging to the rhombohedral system. Carbonate of lime and iodide of mercury also are good examples of dimorphism. Some substances, such as the sulphate of nickel, sulphate of zinc, crystallize in three different systems, and are thus *trimorphous.*

DIMPLE, n. *dĭm′pl* [Lith, *dumbu*, to be hollow: Fris. *dobbe*, a ditch, a hole]: a small natural hollow or depression in the cheek, chin, or other part of the face: V. to mark with small cavities. DIM′PLING, imp. DIMPLED, pp. *dĭm′pld.* DIM′PLY, a. *-plĭ*, full of dimples or small depressions.

DIMYARY, n. *dĭm′ĭ-ăr-ĭ* [Gr. *dis*, twice; *mūōn*, a muscle]: a bivalve mollusk, in which the shell is closed by two adductor muscles: ADJ. of or pertaining to.

DIN, n. *dĭn* [imitative of continued sound: Icel. *dynia*, to resound; *dinr*, a din; Dan. *dön*, a rumble; L. *tinnīrĕ*, to sound as a bell]: a confused continued noise; a continuous loud rattling or rumbling sound: V. to stun or confuse with noise; to annoy or harass with noisy or discordant sounds. DIN′NING, imp. DINNED, pp. *-dĭnd.*

DINABURG, *dē′nâ-bôrch:* town in the govt. of Vitebsk, Russia, on the Düna river, 57 m. n.w. of Drissa, 120 m. s.e. of Riga, on the railroad connecting Warsaw with St.

Petersburg and another leading to Riga. It is an important military position, strongly fortified, has valuable manufactures of leather, lumber, flour, brick, lime, and tiles, and ships large quantities of lumber, tallow, flax, and hemp. Pop. 69,675.

DINAGEPORE (*Dinajpur*): district in the Rajshahye division (Kuch Behar) of Bengal; 4,118 sq. m. The people are almost entirely rural, and mainly of aboriginal descent —of the stock that occupied India before the Sanskrit people invaded it. Pop. 1,555,835.

DINAN, *dē-nŏng′:* very old town of France, dept. of Côtes-du-Nord, on the Rance, 30 m. n.w. of Rennes, 14 m. s. of St. Malo. The situation of Dinan, on the summit of a steep hill of granite, with the Rance flowing through a valley 250 ft. below, is very romantic. It is surrounded by old walls pierced by four gates, and was formerly defended by a strong castle, part of which has been converted into a prison. Its overhanging houses, and arcades resting on carved granite pillars, present many picturesque architectural features, attractive to the antiquary and the artist. The cathedral of St. Sauveur is a beautiful ornate edifice, in the Romanesque style, containing the heart of the French warrior Bertrand du Guesclin. Pop. 10,000.

DINANT, *dē-nŏng′* or *dē-nănt′:* town of Belgium, province of Namur, 14 m. s. of the city of Namur; on the Meuse, in the midst of extremely picturesque scenery. The most noteworthy buildings of Dinant are the church of Notre Dame, an ancient and richly decorated Gothic structure, and the town house, once the palace of the princes of Liége. Pop. 9,788.

DINAPORE, *dē-na-pôr′* (*Dánápur*): civil and military headquarters of the dist. of Patna in Bengal; on the right bank of the Ganges, 10 m. above Patna: divided into two parts, the Cantonment and the Nizamat. Pop. 44,419.

DINARIC ALPS, *dē-năr′ĭk:* branch of the Alpine system connecting the Julian Alps with the w. ranges of the Balkan. It extends in a s.e. direction, from Mount Klek, e. of Fiume, to the mouth of the Narenta; and stretching along the borders of the Adriatic, it spreads its ramifications through the greater part of Croatia, Dalmatia, and Herzegovina. The Dinaric Alps, the highest summits of which are Mount Dinara and Mount Prolok, seldom exceed 7,000 ft. in height. The range is principally calcareous.

DINDIGUL, *dĭn-dĭ-gŭl′:* town in India, in the British dist. of Madura, presidency of Madras, at the extremity of the valley of Dindigul, noted for the possession of a well of great depth, popularly reputed unfathomable, which yields excellent water. Pop. about 14,000, of whom 12,000 are Hindus, 1,500 Mohammedans, and 50 Christians.

DINE, v. *dīn* [F. *dîner*, to dine—from OF. *disner*—from mid. L. *disnārĕ*, to dine: AS. *dynan*, to feed: It. *desinare*, to dine: L. *desĭnĕrĕ*, to leave off—*lit.*, to leave off labor in order to partake of food]: to take the principal meal of the

day; to give a dinner to. DI'NING, imp. DINED, pp. *dīnd*, having eaten a dinner. DINNER, n. *dĭn'nẽr*, the principal meal; an entertainment; a feast. TO DINE WITH DUKE HUMPHREY, to go without a dinner—said to have arisen from the practice of persons without means to dine, walking about St. Paul's where Duke Humphrey was supposed to be buried. *Note.*—Dr. Mackay suggests a derivation of DINNER, from Gael. *dinnear*, a dinner—from *dion*, protection, thus denoting a protection or fortification against hunger: Diez and Littré say, F. *dîner* may be a corruption of L. *di-cœnārĕ*, to sup a second time, whence OF. *disner*, to dine.

DING, v. *dĭng* [an imitative word: Icel. *dengia*, to hammer: Dan. *dænge;* Sw. *danga*, to bang, to thump]: to strike; to knock; to dash with some degree of violence. DING'ING, imp. DINGED, pp. *dĭngd*. DING-DONG, an imitation of the sound of repeated blows on a metallic body, as a bell.

DING-AN-SICH [Germ.]: Thing in itself; see KANT.

DINGELSTEDT, *dĭng'-el-stĕt*, FRANZ VON, BARON: German poet and dramatist: b. Halsdorf, Upper Hesse, 1814, June 30; d. Vienna 1881, May 15. His *Songs of a Cosmopolitan Nightwatchman* (1841) shocked all officialdom, but had a great popular success; and his *Poems* (1845) showed true poetic feeling and great descriptive power, the latter also visible in his travel sketches and stories; one of the most successful of the latter is *The Amazon*, a society novel. His tragedy, *The House of the Barneveldts* (1851) was a splendid success. He adapted plays from Molière, Shakespeare, and others, to the German stage, and wrote a volume of *Studies and Copies After Shakespeare*.

DINGHY, or DINGEY, n. *dĭng'gĭ* [Beng.]: in *East Indies*, a common name for a boat.

DINGLE, v. *dĭng'gl* [Gael *dinn* or *dun*, a hill, and *glac*, a hollow: Lth. *dumbu*, to be hollow: comp. *dimple* (see DEN)]: a narrow valley; a glen; a hollow on the side of a hill.

DINGLE BAY: indentation of the Irish coast, on the w. of Kerry, between Brae Head, Valentia Isle, on the s., and Dunmore Head and Blasket Isles, on the n., from which points, 18 m. apart, it runs 24 m. e.n.e., narrowing to 7 miles.

DINGLE-DANGLE, ad. *dĭng'gl-dăng'gl* [imitative (see DANGLE)]: hanging loosely; in a careless pendant manner.

DINGLEY, NELSON, Jr.: statesman: 1832,–Feb. 15 1899, Jan. 13; b. Durham, Me. He graduated at Dartmouth College, 1855, studied law, and was admitted to the bar. In 1856, he became editor of the Lewiston (Me.) *Journal*. He was a member of the state legislature 1862–68 and 73, and was twice elected speaker; gov. of Maine 1874–5; representative in congress from 1881 till his death; and member of the Anglo-American commission in 1898.

In the fifty-fifth congress he was the recognized repub. leader of the house, and as chairman of the committee on ways and means, in the extraordinary session 1897, Mar. 15, he reported to the house the new tariff bill, a strongly protective measure which had been for some months in preparation, and which became a law, popularly known as the 'Dingley tariff.' In 1898 he was appointed a member of the Joint High Commission.

DINGO, n. *dĭng'gō* (*Canis Dingo*): the native dog of Australia, regarded by some naturalists as a distinct species, by others as a mere variety of *Canis familiaris*. It exists both in a wild and in a domesticated state; but there is no good reason for thinking that the wild race has originated from dogs introduced from some other country by man. The domesticated dingo is about the size of a shepherd's dog, the wild one is larger. The wild dingo is found in all parts of Australia. It is of a tawny color, has a large head, with muzzle somewhat fuller than the shepherd's dog. The ears are short and erect, the tail bushy, but not so bushy as that of a fox. In running, the dingo, unlike dogs in general, carries the head high, the ears erect, and turned forward. In a wild state, it does not bark. It is very destructive to the sheep of the colonists, and its delight is to kill as many as possible before proceeding to eat. It is very fierce and courageous, but capable of strong attachments.

DINGWALL, *dĭng'wall:* royal and parliamentary burgh, countytown of the united counties of Ross and Cromarty, in the s.e. of Ross-shire, Scotland, at the head or s. w. end of the Cromarty Firth, 11 m. n.w. of Inverness. In Scandinavian, Dingwall means Law or Court Hill; and in Gaelic, it is called Inverpheoran. It consists chiefly of a long street, and lies low, on what was formerly a swamp, amid rich, fertile, and well wooded ground, at the entrance to the beautiful valley of Strathpeffer, the famous sulphureous springs of which are five m. west. A short canal admits vessels drawing nine ft. of water up to the town, where there is a station of the Highland railway, also of the Dingwall and Skye railway. Its prosperity depends on agriculture. Near Dingwall is a vitrified fort, on a conical hill, and there are traces of an ancient castle, where the earls of Ross held their courts. Pop. 2,300, many speaking Gaelic, though all understand, and usually speak, English.

DINGY, a. *dĭn'jĭ* [Ger. *dumpfig*, dead in sound, musty: Dut. *dompig*, dark, close: a supposed dim. of *dung*, thus *dung-y*, soiled with dung]: dusky; brown; soiled; of a dark color. Din'giness, n. *-jĭ-nĕs*, a dusky or dark hue.

DINGY: see Dinghy.

DINICHTHYS, or Deinichthys, *dī-nĭk'thĭz:* remarkable fossil fish found in Ohio in a mass of rock of the Devonian age; believed to have been the largest fish of that formation. Prof. J. S. Newberry, of Columbia College, New York, has described it in his *Structure and Relations*

of Dinichthys (1875), as being from 15 to 18 ft. long, 3 ft. thick, with head 3 ft. long. jaws 2 ft. long, and central dorsal shield 2 ft. in diameter. Some specimens were without ordinary teeth, but their jaws closed up on each other like the parts of scissors, while others had two sharp front teeth. Prof. Newberry connects them with the *coccosteus*, but believes them to have been much larger.

DINKELSBÜHL, *dĭnk'ĕls-bül:* town of Bavaria, on the Wernitz, 44 m. s.w. of Nuremburg. It is an ancient walled town, formerly a free city of the empire. It has important manufactures of hosiery, coarse linen, straw hats, paper, etc.; and a dye-work, brewery, and mills. Dinkelsbühl suffered much during the Thirty Years' War. Pop. 5,000.

DINNER: see under Dine: also, see Meals.

DINOBRYINA, n. plu. *dī-nō-brĭ-ī'na* [Gr. *deinos*, terrible; *bruon*, a kind of sea-weed; L. suf. *-ina*]: family of *Infusoria*. It comprises two genera, *Dinobryon* and *Epipyxis*.

DINOCHARIS, n. *dī-nō'kăr-is* [Gr. *deinos*, dreadful; *charis*, grace]: genus of *Rotatoria*, belonging to the family *Euchlanidota*. They have a single cervical eye.

DINOCRATES, *dī-nŏk'ra-tēz:* Greek architect, eminent in the time of Alexander the Great, to whom he proposed to cut Mount Athos into a statue of the conqueror, holding a city in one hand, and in the other a basin into which all the waters of the mountain should empty themselves. Alexander rejected this project as chimerical, but employed Dinocrates in the rebuilding and beautifying of Alexandria, B.C. 332. Under Ptolemy Philadelphus Dinocrates began to build a temple in honor of Arsinöe, in which he intended to suspend a statue of the queen by means of loadstones, but he did not live to complete the undertaking. He is also credited with having rebuilt the temple of Ephesus after it was burnt by Erostratus.

DINOPHIS, n. *dīn-ŏf'is* [Gr. *deinos*, strange, dreadful; *ophis*, a snake]: genus of *Ophidia*, formed for the reception of a gigantic constricting serpent from the tertiary rocks of the United States.

DINORNIS, or Deinornis, n. *dī-nŏr'nĭs* [Gr. *deinos*, terrible; *ornis*, a bird]: genus of large birds of the tribe *Brevipennes* (q.v.), of which no species is now known to exist, but of which the bones have been found in New Zealand, in the most recent deposits, in the sand of the seashore, in swamps, in the soil of forests, in river beds, and in caves: and concerning which, with other large birds nearly allied (*Palapteryx* and *Aptornis*), traditions are still current among the natives, rendering it probable that they continued to inhabit New Zealand, if not to the 18th, at least to the 17th c. The name by which these birds are known in the traditions of New Zealand is *Moa*. They are said to have been decked in gaudy plumage, for the sake of which they were objects of pursuit, as well as for their

flesh, which was much esteemed. They are also described as having been stupid, fat, and indolent birds, incapable of flying, living in forests and mountain-fastnesses, and feeding on vegetable food. With all this, the inferences deduced from their bones by comparative anatomists perfectly agree. These bones are not properly fossil or mineralized, but retain great part of their animal matter. It is even thought not impossible that some of the smaller species of Dinornis may yet be found alive; of the larger ones, this can no longer be hoped. And these much exceeded in size any existing bird, some of the bones being at least twice the size of those of the ostrich; but the body seems to have been more bulky in proportion, and to have more resembled that of the dodo, though the legs were long, and *D. giganteus* must have stood at least 10½ ft. in height. The framework of the leg is the most massive of any in the class of birds, and the bones are remarkable for the solidity of their structure. The toe-bones of *D. elephantopes* almost rival those of the elephant.

The number of bones of Dinornis which have been found is great; several species have been distinguished, and an almost complete restoration of skeleton has been effected. The first bone ever seen by a naturalist—a bone of the leg—was brought under the notice of Prof. Owen, 1839; and it is worthy of being borne in mind, that from that one bone he assigned to the Dinornis its true place in the system of nature, and pointed out some of the most important characters which are now most fully proved to have belonged to it.

DINOSAURIA, or DEINOSAURIA, n. plu. *dī-nō-saw′rĭ-a*, or DINOSAU′RIANS [Gr. *deinos*, terrible; *sauros*, a lizard]: an extinct order of *Reptilia*, with many characters allying them to birds in the structure of the skull and skeleton. The body was covered with scales or bony plates, the limbs long and stilted, the tail massive, and equaling or exceeding the rest of the body in length. Many of them were of gigantic size, beyond that of any other land animals living or extinct, and exceeded only by the whales. During the Triassic, Jurassic, and Cretaceous periods, this group was the dominant form of terrestrial life. The most ancient known dinosaurs of the Triassic Period were carnivorous land animals of moderate size, and comparatively light and agile; later appeared huge, massive herbivorous quadrupedal and bipedal types, some scale-covered, others with heavy bony plates, spines, horns, and frills to protect them against their carnivorous enemies. They disappeared at the close of the Cretaceous Period, leaving no descendants or near relatives. Like other reptiles, they appear to have been cold-blooded, slow-moving, and unintelligent compared with the mammals which succeeded them, and less able to adapt themselves to the new conditions of life brought about by gradual changes of climate during geologic time. Their extinction paved the way for the predominance of the mammals and their evolution into the various modern races.

DINOTHERIUM, or DEINOTHERIUM, n. *dī-nō-thē′rĭ-ŭm* [Gr. *deinos*, terrible; *therĭŏn*, a wild beast]: remarkable extinct animal, the cranial bones of which are found in the Miocene formations of Germany, France, etc. The animal was provided, like the elephant and the walrus, with a pair of long tusks; but these projected from the end of the lower jaw, which is deflected downward at a right angle to the body of the jaw. In addition to the two tusks, there were five double-ridged grinders on each side of both jaws. The nasal cavity is large, apparently supplying attachment for a trunk, as in the elephant.

DINSMORE, HUGH ANDERSON, American lawyer: b. Benton co., Ark., 1850, Dec. 24. He was clerk of the circuit court 1873–4, when he was admitted to the bar, and began practice in Fayetteville; was prosecuting attorney of the 4th judicial district of Arkansas in 1878–84; a Democratic presidential elector in 1884; minister-resident and consul-general in the kingdom of Korea in 1887–90; and a member of Congress in 1893–1903.

DINT, n. *dĭnt* [imitative of the sound of a blow: Icel. *dynta*, to shake up and down, to dint; *dyntr*, a dint: Sw. *dunt*, a stroke; *dunta*, to strike]: a blow; power exerted; effort; force; mark or cavity made by a blow: V. to strike so as to make a small hollow. DIN′TING, imp. DIN′TED, pp. BY DINT OF, by the force or power of.

DINWIDDIE, WILLIAM, American journalist and author: b. Charlottesville, Va., 1867, Aug. 23. When only 14 years of age, he was assistant electrician of the National Museum at Washington. He became inspector of customs at Corpus Christi, Texas, in 1883; was connected with the Bureau of American Ethnology from 1886 to 1895, at which time he went into journalism, serving as correspondent and illustrator for the New York *Herald*. He became photographer for the Baltimore & Ohio Railroad in 1897. During the campaign in Cuba and Porto Rico and in the Russo-Japanese War he served as war correspondent. He has published: *Puerto Rico and Its Possibilities; The War in the Philippines; The War in South Africa; War Sketches, in Truth; Japanese Campaign, Japanese Situation, General Conditions, Industries, Finance, etc.*

DIOCESAN, n. *dī-ŏs′ĕ-săn* [F. *diocèse*—from mid. L. *diocēsĭs*—from Gr. *dioikēsĭs*, management of a household, a jurisdiction—from *dia*, through or over; *oikos*, a house—*lit.*, one who has the management of a household]: a bishop, viewed in relation to his own clergy or flock; one who holds a diocese: ADJ. of or belonging to a diocese. DIOCESAN COURTS: see CONSISTORY: COMMISSARY.

DI′OCESE [F.—from Gr. *dioikesis*, administration; and *dioikeo*, I govern]: the territory over which a bishop exercises ecclesiastical jurisdiction. The term occurs as early as the time of Cicero, as the special designation of districts in Asia Minor. In the organization of the Roman Empire introduced by Constantine the Great, the designation diocese was applied to the larger divisions, which were subdi-

vided into provinces. About the middle of the 5th c., the dioceses of the empire were: the East, Egypt, Asia, Pontus, Thrace, Macedonia, Dacia, Illyria, Italy, Africa, Gaul, Spain, and Britain. The dioceses were governed some by Prefects, some by Proconsuls, and others by Vicars. The provinces were under Rectors. The government of the Christian religion, as established by Constantine, was adapted to this division, and the term diocese and others passed over to ecclesiastical matters. At first, a diocese meant the collection of churches or congregations under the charge of an archbishop. The name came afterward to be applied to the charge of a bishop, which had previously been called a parish. England and Wales are divided ecclesiastically into two provinces, viz,. Canterbury and York, the former being presided over by the primate of All England, and the latter by the primate of England. Each of these is subdivided into dioceses, and these again into archdeaconries, rural deaneries, and parishes. A diocese is synonymous with the see of a suffragan bishop. See BISHOP.

DIOCLEA, n. *dī-ŏk'lĕ-a* [named after *Diocles* Carystinus, an ancient Greek botanist]: genus of papilionaceous plants, typical of the sub-tribe *Diocleæ*.

DIOCLETIANUS, *dī-ō-klē-shĭ-ā'nŭs*, VALERIUS, Emperor of Rome: 245–313 (ruled 284–305); born in humble life near Salona, in Dalmatia. He inherited from his mother, Dioclea, the name of Diocles, which he afterward enlarged into Diocletianus, and attached as a cognomen to Valerius, a name of the most patrician associations. He adopted a military career, and served with distinction under Probus and Aurelian, accompanied Carus on his Persian campaign, and finally, on the murder of Numerianus having been discovered at Chalcedon, he was proclaimed emperor 284 by the army on its homeward march. The suspected assassin of Numerianus, the prefect Arrius Aper, Diocletianus slew with his own hands, in order, it is alleged, to fulfil a prophecy communicated to him, while still a lad, by a Druidess of Gaul, that he should accede to a throne as soon as he had killed an *aper* (wild-boar). In 285, Diocletianus commenced hostilities against Carinus (the joint-emperor with the deceased Numerianus), who, though victorious in the decisive battle that ensued, was murdered by his own officer, thus leaving to Diocletianus the undisputed supremacy. His first years of government were so molested by the incursions of barbarians, that, in order to repel their growing aggressiveness, he took to himself a colleague—namely, Maximianus—who, under the title of Augustus, became joint-emperor 286. Diocletianus reserved for himself the charge of the eastern empire, and gave the western to Maximian. Still the attacks of the barbarians continued as formidable as ever. The empire was menaced by the Persians in the e., by the Germans and other barbarians in the w.; and, to provide for its permanent security, Diocletianus subjected it to a still further division. In 292, Constantius Chlorus and Galerius were proclaimed as Cæsars, and the distribution of the Roman Empire

was now fourfold: Diocletianus taking the East, with Nicomedia as his seat of government; Maximian, Italy, and Africa, with Milan as his residence; Constantus, Britain, Gaul, and Spain, with Trĕves as his headquarters; Galerius, Illyricum, and the entire valley of the Danube, with Sirmium as his imperial abode. It was upon his colleagues that most of the burden of engaging actively in hostilities fell, as Diocletianus seldom took the field in person. Among the conquests, or rather re-conquests, that were made under his rule, may be enumerated that of Britain, which, after maintaining independence under Carausius and Allectus, was, in 296, restored to the empire; that of the Persians, who were defeated, and compelled to capitulate in 298; and that of the Marcomanni, and others of the northern barbarians, who were driven beyond the Roman frontier. Diocletianus, after 21 years' harassing tenure of government, desired to pass the residue of his days in tranquillity, 305, May 1, accordingly, he abdicated the imperial throne at Nicomedia, and compelled his colleague, Maximian (much against the latter's will), to do likewise at Milan, Diocletianus sought retirement in his native province of Dalmatia, and for 8 years resided at Salona (see SPALATO), giving his time to philosophic reflection, to rural recreation, and to horticultural pursuits. Two years before his abdication, he was instigated by his colleague, Galerius, to that determined and sanguinary persecution of the Christians for which his reign is chiefly memorable.

DIOCTAHEDRAL, a. *dī-ŏk-ta-hē′dral* [Gr. *dis*, twice; Eng. *octahedral*]: having the form of an octahedral prism with tetrahedral summits.

DIODATI *dē-o-dâ′tē*, JEAN: 1576–1649; b. Geneva: Swiss theologian. He belonged to a noble Italian family, originally of Lucca. His progress in letters was so rapid, that Beza caused him to be appointed prof. of Hebrew at the age of 21. In 1608, he became pastor of the Reformed Church, and in the following year, prof. of theology. About this time, he endeavored to spread the doctrines of the reformation in Venice and other cities of Italy, but without success. In 1614, he went to Nímes, where he preached three years; and in 1618, he was sent to the synod of Dort, to represent the Genevese Church. Here his talents were so highly estimated that he was one of the divines appointed to draw up the articles of the synod. He died at Geneva. Diodati was a somewhat intolerant Calvinist; but as a preacher, he was eloquent, persuasive, and conscientious. His Italian translation of the Bible appeared 1607; his French, 1644. Among his other works are *Annotationes in Biblia* (1607), *De Fictitio Pontificiorum Purgatorio* (1619), and *De Justa Secessione Reformatorum ab Ecclesia Romana* (1628).

DIODIA, n. *dī-ŏd′ĭ-a* [Gr. *dia*, through; *hodos*, a way: so named because many of the species grow by the roadside]: genus of plants, consisting of trailing shrubs or herbs, belonging to the order *Rubiaceæ*.

DIODON, *dī′o-don* [Gr. two-toothed]: Linnæan genus of fishes, now giving its name to a family, *Diodontidæ* (*Gymnodontes* of Cuvier), of the order *Plectognathi*. The fishes of this family have no distinct teeth, but their jaws, which are shaped like the beak of a parrot, are covered with a substance like ivory, formed of the teeth consolidated together. This is reproduced as fast as it is worn away by use, and the mouth is admirably adapted for grinding down the crustaceans and sea-weeds on which these fishes feed. Their flesh is mucous, and that of some is regarded as poisonous. None of them are used for human food. Some of them, particularly of the genera Diodon and *Tetraodon*, have a remarkable power of inflating their bodies by filling their stomachs with air, the stomach being extremely dilatable, and assuming a globular form when distended, whence they have received the name Globe-fish, while from the spines, which stand out in all directions, like those of a hedgehog when rolled up, some of them have been called porcupine fishes. *Chilomycterus schœpfi*, with blackish stripes above, is found from Cape Cod to Tex., and is called Burr-fish, Swell-toad, etc.; and in the south occurs the longer-spined *Diodon hystrix*, the more notable Porcupine-fish. In the allied family *Tetraodontidæ*, with teeth confluent into two instead of one, we have *Orbidus maculatus* (otherwise *Tetraodon turgidus*) with close-set prickles, and known by similar names, such as Swell-fish, Swell-toad, Puffer, etc.; and the Smooth Puffer, or Rabbit-fish (*Lagocephalus lævigatus*), smooth except spiny below.

DIODON′TIDÆ, n. plu. See Diodon.

DIODORUS SICULUS, *dī-o-dō′rŭs sĭk′ū-lŭs:* Greek historian in the times of Julius and Augustus Cæsar: b. at Agyrium, in Sicily. Little is known of his life beyond what is told by himself. He travelled in Asia and Europe, and lived long in Rome, collecting the materials of his great work, the compilation of which occupied 30 years. This work, the *Bibliotheca* or Library, was a history of the world, in 40 books, from the creation to the Gallic wars of Julius Cæsar. It was divided by the author into three parts—the first of which, in six books, comprises all the Greek and foreign myths down to the Trojan war; the second, in 11 books, contains the history from B. C. 1184, to the death of Alexander the Great; the third, in 23 books, continues the narrative of events from that date to B. C. 60. Of the *Bibliotheca*, the first five books are extant entire; the next five books are wholly lost; the next ten are complete and of the remainder of the work, considerable fragments have been preserved. Had Diodorus possessed any powers either of criticism or of arrangement, his work would have been of the greatest importance; but he was in both respects so deficient, that his history has no practical value beyond what belongs to an immense mass of raw and now scarcely available material. His narrative is colorless and monotonous, and his diction, generally clear and simple, holds a sort of middle place between the pure Attic and the colloquial Greek of his time. The best

editions of Diodorus are Wesseling's (Amst. 1746), the Deux-ponts' (1793–1801), Dindorf's (1831, new ed. 1868), and Bekker's (1854).

DIŒCIOUS, a. *dī-ēsh′ĭ-ŭs* [Gr. *dis*, twice; *oikos*, a house]: in *botany*, a term applied either to plants or flowers, when not only the flowers but the individual plants are unisexual —i.e., when male and female flowers are produced upon separate plants. Diœcious plants form a distinct class in the Linnæan sexual system; but in thus placing them apart, if the principle of arrangement had been strictly maintained, great violence would often have been done to natural affinities; Diœcious species frequently occurring in genera and families usually *Monœcious* (q.v.) or *hermaphrodite;* also monœcious and hermaphrodite species in those usually diœcious. Familiar examples of Diœcious plants may be seen in most species of willow. Among cultivated plants, hemp, spinach, and the date-palm, may be instanced. DIŒCIA, n. plu. *dī-ēsh′ĭ-ă*, the class of plants in the system of Linnæus defined by this character. DIŒCIOUSLY HERMAPHRODITE, *dī-ēsh′ŭs-lĭ*, in *bot.*, having flowers which are hermaphrodite, but none having both stamens and pistils perfect—thus one flower may have the stamen perfect while the petals are imperfect, and so *vice versâ*.

DIOGENES, *dī-ŏj′ė-nēz*, THE CYNIC: B.C. abt. 412–323; b. Sinope, in Pontus: philosopher. His father, Icesias, or Icetas, a banker by occupation, was convicted of having swindled, and so the young Diogenes had to leave Sinope. His youth had been that of a spendthrift and a rake; but on coming from Sinope to Athens, he became interested in the character of Antisthenes, by whom, however, his first advances were repelled. In spite of his inhospitable reception, Diogenes renewed the attempt to find favor with Antisthenes; but though often driven away by blows, his perseverance at last prevailed; and Antisthenes, moved with compassion, consented to admit him as a pupil. Diogenes, from being an extravagant debauchee, plunged into the opposite extreme of austerity and self-mortification. He would roll in hot sand during the heat of summer, in winter he would embrace a statue covered with snow. His clothing was of the coarsest, his food of the plainest. His bed was the bare ground, whether in the open street or under the porticoes. His permanent residence (if such it could be called) was a tub which belonged to the Metroum, or the temple of the Mother of the Gods. His eccentric life did not, however, cost him the respect of the Athenians, who admired his contempt for comfort, and allowed him wide latitude of comment and rebuke. Practical good was the chief aim of his philosophy; for literature and the fine arts he did not conceal his disdain. He laughed at men of letters for reading the sufferings of Ulysses, while neglecting their own; at musicians who spent in stringing their lyres the time which would have been much better employed in making their own discordant natures harmonious; at savants for gazing at the heavenly bodies, while sublimely

incognizant of earthly ones; at orators who studied how to enforce truth, but not how to practice it. He was seized by pirates on a voyage to Ægina, and carried to Crete, where he was sold as a slave. When asked what business he was proficient in, he answered: 'To command men.' His purchaser was Xeniades of Corinth; but the slave soon came to rule the master, acquired his freedom, was appointed tutor to the children, and spent his old age as one of the household. It was here that he had his interview with Alexander the Great. The king opened the conversation with: 'I am Alexander the Great,' to which the philosopher answered: 'And I am Diogenes the Cynic.' Alexander then asked him in what way he could serve him, to which Diogenes rejoined: 'You can stand out of the sunshine.' Alexander is said to have been so struck with the Cynic's self-possession, that he went away, remarking: 'If I were not Alexander, I should be Diogenes.' In spite of his early excesses and his subsequent privations, Diogenes lived at Corinth till the age of 90.

DIOGENES APOLLONIA, *dī-ŏj'ē-nēz ăp-ol-lō'nĭ-â:* abt. B.C. 500; b. Apollonia, Crete: philosopher. He was a pupil of Anaxagoras, taught philosophy at Athens, teaching that air was the first principle of all things, wrote a work on cosmology of which Diogenes Laertius preserved a fragment, and frequently exercised his abilities in the service of the great men of his time, who employed him either in the framing of new laws, or in draftng of treaties.

DIOGENES LAERTIUS, *dī-ŏj'ē-nēz la-er'shŭs:* author of a biographical history of the Greek philosophers, seems to have been born at Laerta, in Cilicia, and to have taken his surname from that town. So little is known of his personal history, that the period at which he lived is a matter of doubt. By some it is assigned to the end of the 2d, and by others to the middle of the 3d c. after Christ. His name has been kept alive by his *Lives of the Philosophers*, a work which contains a great mass of interesting information regarding the private lives and habits of the most eminent philosophers of antiquity. Though the work is utterly worthless in respect of plan, coherence, or criticism, it yet contains so many piquant anecdotes, and so many valuable quotations from lost works, that Montaigne's wish was justifiable—that instead of one Laertius, we had had a dozen. The best editions of Laertius are those of Hübner (1831) and Cobet (1850).

DIOME'DEA. See ALBATROSS.

DIOMEDE ISLANDS, *dī'o-mēd:* group about the middle of Behring's Strait, form, as it were, a number of stepping stones between the most easterly point of Asia, and the most westerly of America. Their names are Fairway, Crusenstern, and Ratamanow; their central point is in lat. 65° 46′ n., and long. 168° 55′ west.

DIOMEDES, *dī'o-mē'dēz:* in legend bravest, after Achilles, of all the Greeks who took part in the Trojan war. His exploits occupy a prominent place in the record

of the heroic deeds sung by Homer in the *Iliad*. He vanquished in fight Hector and Æneas, the most valiant of the Trojans; and even Mars and Venus, when they took the field on the Trojan side, were attacked and wounded by him. In the games instituted by Achilles in honor of Patroclus, he gained the prize in the chariot-race, and worsted the mighty Ajax in single combat. He was equally distinguished in the council. He opposed the proposal of Agamemnon to leave the plains of Troy without having gained the object of the expedition, and prevailed; he even adhered to his opinion after Achilles had rejected the proffered reconciliation. He carried off the horses of Rhœsus from the enemies' tents and with Ulysses removed Philoctetes, who had the arrows of Hercules, from Lemnos, which were two conditions of the fall of Troy. Finally, he was one of the heroes who were concealed in the wooden horse by whom the capture of Troy was accomplished. On returning to Argos (to the crown of which he had succeeded after the death of Adrastus), he found that his wife had proved unfaithful in his absence. Leaving home, he went, according to one tradition, to Italy, where he took part with the Trojans against Turnus. Several cities on the s. shores of that country claimed him as their founder. It was another mythical Diomedes, king of the Bistones in Thrace, a son of Mars, who fed his mares on the flesh of men, and who was slain by Hercules.

DION, *dī'on*, OF SYRACUSE: b. in that city near close of the 5th c. B.C., assassinated there abt. 353: famous for having overthrown the power of Dionysius the Younger. He was related by marriage to Dionysius the Elder, enjoyed much favor at court, and became very wealthy. On the accession of Dionysius the Younger he was banished from Sicily, took refuge in Greece, and lived there till despoiled of his wife and his fortune by the young tyrant. He then collected a body of troops, sailed from Zacynthus 357, and landing on Sicily in the absence of Dionysius, took possession of Syracuse, and repulsed an attack by the troops from the citadel on the Island of Ortygia. Dion proclaimed liberty to the citizens of Syracuse, but they, incited soon afterward by Heraclides, drove his troops and himself from the city. The troops of Dionysius then attacked the city, set it on fire, and began a massacre; when the citizens urged Dion to return, and he, hastening at the first alarm, defeated the soldiers of the tyrant, obtained full control of the city, and put Heraclides to death. Within a few months a conspiracy was formed against him and he was killed.

DIONÆA, n. plu. *dī'ō-nē'ă* [*Diōnœa*, Venus, being a patronymic from *Diōnē*, the mother of Venus; *Diōnē*, a name of Venus herself]: a curious and interesting genus of plants of the nat. ord. [*Droseraceæ*, having a 5-partite calyx, 5 petals. 10–20 stamens, and one style, with 5 closely united stigmata. Only one species is known, *D. muscipula*, sometimes called VENUS'S FLY-TRAP and the CAROLINA CATCHFLY PLANT. It grows in marshy places in the

warmer parts of N. America, as far n. as N. Carolina, and is a perennial plant, with a rosette of root-leaves from the midst of which arises a leafless stem (scape) about 6 inches high, terminating in a corymb of white flowers. It is remarkable for the irritability of its leaves. The leaf-stalk is elongated, winged, and leaf-like, and bears at its extremity an orbicular leaf, set round at the margin with stiff hair-like 'spines,' and having on its upper surface many small glands, and three delicate irritable hairs on each side, so placed that an insect can hardly traverse the leaf without touching one of them, when the two sides of the leaf immediately fold together upon it, and lay hold of it, the marginal bristles crossing one another, and preventing possibility of escape. The leaf does not open again till the whole substance of the insect has been absorbed by the plant, and nothing but the skeleton of the captive remains. For this purpose, the plant exudes a secretion of a character somewhat similar in its digestive properties to pepsine; and under the influence of this, the material of the insect capable of yielding nourishment to the plant, is digested, and ultimately absorbed by the same glands that secreted the fluid. This process of digestion and absorption sometimes occupies three weeks.

DION CASSIUS COCCEIANUS, *dī′on kăsh′ĭ-ŭs kŏk-sē-yā′nŭs:* b. 155, at Nicæa, in Bithynia, where also he died at an unknown date: Gr. historian. He held various high offices of state under the Roman emperors, was twice consul, and had the intimate friendship of Septimius Severus. He is best known by his *History of Rome,* in 80 books, of which only 18 (36th to 54th) have reached us complete. The others are known to us only from fragments and abridgments. His high position gave him access to the national archives, and as an authority on some points, especially on the imperial epoch of Roman history, his work is of considerable value. He wrote after the model of Thucydides, to whom, indeed, he is far inferior, both in vigor of judgment and acuteness of criticism; yet many passages of his History might be quoted as among the best samples of the rhetoric of the age in which he lived. The best editions of his history are those of Bekker (1849) and Dindorf (1865).

DION CHRYSOSTOMUS, *dī′on krĭs-ŏs′to-mŭs* (Golden-mouthed): b. at Prusa, in Bithynia, toward the middle of the 1st c.; died abt. 117: eminent Gr. rhetorician. His father, Pasicrates, gave great attention to his education, which was also enriched by travel. After residing some time in his native town, he went to Rome, where he had the misfortune to excite the suspicion of the emperor Domitian, and was compelled to flee. On the accession of Nerva, A.D. 96, he returned to Rome, and was honorably received. Nerva's successor, Trajan, held him in the highest estimation, even permitting him to ride beside himself in the imperial chariot. His excellent disposition procured him many friends, while his remarkable powers of oratory excited universal admiration. He died at

Rome. He left a very great number of orations, of which 80 are extant in the whole, with fragments of 15 others. They discuss questions in politics, morals, and philosophy, and are written in pure Attic Greek. According to Niebuhr, he was the first writer after Tiberius that greatly contributed toward the revival of Greek literature.' Good editions of his orations are those of Reiske (Leip. 1784), Emperius (1844), and L. Dindorf (1857).

DIONNE, NARCISSE EUTROPE: Canadian author: b. St. Denis, Que., 1848; educated at Grand Seminaire, College of St. Anne and Levis College; practiced medicine for a time at Stanfold and then returned to Quebec and the profession of journalism. His works include: *Le Tombeau dc Champlain* (1880); *Les Cercles Agricoles dans la Province de Quebec* (1881); *Etats Unis, Manitoba et Nord Ouest* (1881); *Têta Nationale des Canadiens Francais à Windsor, Ont.* (1883); *Historique d'eglise de Notre Dame des Victories* (1888); *Vie de Jacques Carticr* (1889); *La Nouvelle France de Cartier à Champlain* (1891); *Samuel Champlain: Sa Vie et Ses Ocuvres* (1st vol. 1891); *Vie de C. F. Painchand* (1891) *L'Oeuvre de Mgr. de Forbin Janson* (1895); *Histoire de la parroise de Ste Anne* (1900); *Quebec Under Two Flags de la Pacatiere* (*with Doughty* 1903); *Serviteurs et Servants de Dieu au Canada* (1904); *Les ecclésiastiques et les Royalists français réfugies au Canada a l'epoque de la Revolution* (1905); *Inventaire chronologique des livrcs, brochures, journaux ct revues publics en langue française dans la Province de Quebec* (1764–1905) (1905); (1906 2d Vol.) (1907 3d Vol.); *Vie de C. F. Painchand* 2d vol. (1905); *Français Refugies au Canada* (1905).

DIONYSIA: see Bacchanalia: Bacchus.

DIONYSIUS, *dī-o-nĭsh'ĭ-ŭs*, the Elder, Tyrant of Syracuse: b.c. 431 (or 430)–369. He was originally a clerk in a public office, but early showed a passion for political and military distinction. When the Agrigentines, after the conquest of their city by the Carthaginians, accused of treachery the Syracusan generals who had failed to relieve them, Dionysius supported their accusations before the people of Syracuse, and induced the latter to appoint new commanders, of whom he himself was one. But in a very short time he supplanted his colleagues also, and, when only 25 years of age, made himself, by the help of his mercenaries, absolute ruler of the city. To strengthen his 'tyranny' (the name given by the Greeks to any *usurped* authority, however wisely and beneficently exercised), he married the daughter of Hermocrates, the late head of the aristocratic party, and thus attached the followers of that leader to himself. After he had fiercely suppressed several insurrections, and conquered some of the Greek towns of Sicily, he made preparations for a great war with the Carthaginians. It broke out b.c. 397. At first, fortune favored Dionysius, but after a short time he suffered a series of reverses, so calamitous, that all his allies abandoned him, and he was shut up in the city of Syracuse, apparently without hope of escape. When he was about

to fall a victim to despair, a pestilence broke out in the Carthaginian fleet. Dionysius took courage, and suddenly attacking his enemies by land and sea, obtained a complete victory. In B.C. 393 and 392, the Carthaginians renewed hostilities, but were defeated on both occasions, and Dionysius was enabled to conclude a most advantageous peace. He now turned his arms against lower Italy, and B.C. 387, after a siege of 11 months, captured Rhegium. From this time he continued to exercise the greatest influence over the Greek cities of lower Italy, while his fleets swept the Tyrrhenian and Adriatic Seas. Dut Dionysius was not contented with the reputation of being the first warrior and statesman of his age; he wished to shine as a poet also. He even ventured so far as to contend for the prize at the Olympic games, and about the end of B.C. 388, sent thither a splendid embassy, comprising the best reciters of the time, whose utmost skill, however, could not induce the judges to decide in his favor. Dionysius was more successful at Athens, where he several times obtained the second and third prizes for tragedy, his last production obtaining even the first. He also invited many poets and philosophers to his court, his treatment of whom, however, was not always courteous. In B.C. 368, he renewed the war with the Carthaginians, whom he wished to drive out of Sicily altogether, but died in the following year, before he could accomplish his design. It was rumored that his death was hastened by his physician, at the instigation of his son. Dionysius was unquestionably a most vigorous ruler, but unscrupulous as to the means for securing his ends, and tormented in his last years by the suspicion that he was surrounded with traitors.

DIONYSIUS THE YOUNGER: son of Dionysius the Elder, celebrated his entrance into public life, B.C. 367, by a splendid festival, which lasted 90 days. His political education had been designedly neglected by his father, and in consequence he grew up an indolent, pleasure-loving, and dissolute prince. Dion, a relative of his father, sought to improve him by the instructions of Plato, but his endeavors were frustrated by Philistus, the historian, who disgracefully encouraged the excesses of the youth. Dion was banished, but afterward returning to Sicily, expelled Dionysius from Syracuse. The latter fled to Locri, the birthplace of his mother, Doris, where he was hospitably received. He repaid the kindness of the Locrians by making himself master of their city, which he ruled despotically for several years. B.C. 346, the course of events enabled him to return to Syracuse, but he could not firmly re-establish himself. His cruelties drove the citizens to ask the aid of the Corinthians against him. Timoleon was sent to their assistance, and Dionysius, shut up in the citadel of Syracuse, was compelled to surrender, B.C. 343. He was brought to Corinth, where he soon squandered his wealth, and died in obscurity and extreme poverty.

DIONYSIUS, or DENIS, King of Portugal: 1261, Oct. 9—1325, Jan. 7; b. Lisbon. He succeeded his father, Al-

fonso III., 1279, and shared the govt. with his mother till she favored the aspirations of a younger brother to the throne, when a quarrel ensued and his mother retired from the court. He married (1283) Elizabeth of Aragon, afterward canonized as St. Elizabeth, and instituted a thorough reformation of his kingdom. Among his measures were the promotion of industry and commerce, restriction of the power of the clergy, reorganization of the processes of civil and criminal justice, and establishing the Univ. of Lisbon, and the milit. order of Christ.

DIONYSIUS OF ALEXANDRIA, SAINT, *dī-ō-nĭsh'ĭ-ŭs:* d. 265; b. Egypt. He belonged to a noble family, studied philosophy in early life, was converted to Christianity through reading the epistles of Paul, and became a student and disciple of Origen. He was ordained priest, chosen successor to Heraclas, head of the catechetical school of Alexander, 232, and succeeded him as bp. of the church in Alexandria, 247. Soon afterward a persecution of Christians broke out, in which he was arrested, condemned to death, rescued by peasants, and concealed in the Libyan desert over a year. During the persecution of Valerian he was banished, 257; but the edict of Gallienus allowed him to return, 260. He was author of many pastoral letters and religious treatises.

DIONYSIUS OF HALICARNASSUS: learned critic, historian, and rhetorician: b. abt. middle of the century before Christ. He came to Rome B.C. 29, and resided there 22 years. Dionysius' most valuable work is unquestionably his *Archeologia*, a history of Rome and a mine of information about the constitution, religion, history, laws, and private life of the Romans. Of the 20 books of which it originally consisted, only the first 9 are extant complete, the 10th and 11th nearly so; and of the others, only a few fragments. There are editions by Hudson (1704), Reiske (1776), Kiessling (1870), and Schwartz (1877). His rhetorical works are of high literary merit, and include a *Censura Veterum Scriptorum*, an *Ars Rhetorica*, and a *De Compositione.*

DIONYSIUS, *dĭ-o-nĭsh'ĭ-ŭs*, THE AREOPAGITE; mentioned in the Acts of the Apostles (xvii. 34) as one of the few persons in Athens converted to Christianity by the apostle Paul. A history has been invented for him by ecclesiastical writers, which is interesting though without foundation. It is said that he was in Egypt at the time of the Crucifixion, and observing the eclipse that accompanied it, exclaimed: 'Either God himself is suffering, or he sympathizes with some one who is suffering.' At the time when Paul visited the metropolis of Greece, Dionysius was a member of the council of the Areopagus, whence his name. Tradition also declares that the apostle installed him as the first bp. of Athens, and that he suffered the fate of a martyr. Many writings were falsely current under his name. The style, contents, and historic allusions clearly indicate that the author of these writings could not have lived before the close of the 5th c., and, in fact, the writings

first made their appearance in the 6th c. Dazzling neoplatonic phantasies concerning the divine essence, angels, and holy spirits, splendid descriptions of the ceremonies of worship, glorifications of the priestly hierarchy, panegyrics on monastic life, and mystical interpretations of church doctrine, made the works immensely attractive, especially to the Greek monks, whose manner of life was pre-eminently contemplative. According to a recent hypothesis, the so-called writings of Dionysius are the composition of some Christian Platonist, who, in opposition to the not yet wholly extinguished Gnosticism, sought to incorporate with Christianity the forms, ideas and ceremonies of the Dionysian (Bacchic) mysteries. The translation of the work into Latin by Scotus Erigena, in the dawn of the middle ages, gave a new impulse to monasticism in the Western Church, and may be said almost to have created its mystic theology. The *Areopagitic Theology* was, in fact, the name given during the middle ages, and even as late as the 18th c., to that mystical method of apprehending religious truth made current by the writings ascribed to Dionysius, and afterward formally introduced into Latin Christianity by Hugo St. Victor in the 12th c. This theology proceeds upon the principle, that the Divine Spirit is indispensable even to the understanding of man.

DIONYSIUS EXIGUUS, *ĕks-ĭg-ū-ŭs:* called 'the little,' in reference either to his stature or to his great humility; b. in Scythia (near the Black Sea), but probably of Greek origin. He was living at Rome in the first half of the 6th c., either as abbot or monk, and died abt. 545. He was a great theologian and a profound astronomer, and published a collection of ecclesiastical canons. It was he who introduced reckoning of time by the Christian era: see CHRONOLOGY.

DIONYSIUS THRAX, *thrăks:* grammarian of the 2d c.; b. Alexandria. He taught at Rhodes and at Rome. His *Ars Grammatica*, published about 180, is the fountainhead of all grammar known in Europe; and no work on that science has exercised a wider or more lasting influence. See the edition by Uhlig (1884).

DIONYSUS: see BACCHUS.

DIOPHANTINE, a. *dī-o-făn′tīn:* of or pertaining to Diophantus (q.v.).

DIOPHANTINE ANALYSIS, *dī-ō-făn′-tĭn an-ăl′-ĭ-sĭs:* the solution of indeterminate equations by integers (or rational fractions). The name is derived from Diophantus of Alexandria (q.v.), the greatest of the early writers on this subject and the intellectual predecessor of Fermat. One of the earliest examples is the celebrated cattle problem of Archimedes. Another is the solution in integers of the Pythagorean equation $x^2 + y^2 = z^2$ connected with the theory of the right triangle; here we have the solutions $x=3$, $y=4$, $z=5$ or $x=5$, $y=12$, $z=13$, etc. The equations $x^n + y^n = z^n$ for n greater than 2 admit no integral solutions, if zero values are excluded. The Dio-

phantine Analysis was greatly advanced by Fermat; it is now incorporated in the modern Theory of Numbers (q.v.).

DIOPHANTUS, *dī-ō-făn'tŭs:* Greek mathematician at Alexandria: according to some, about the middle of the 3rd c. His name first occurs in the life of Johannes Damascenus, by John, patriarch of Jerusalem 8th c. Diophantus is commonly represented as the inventor of algebra, but he himself speaks of that science as known before his time. It is possible he may have been acquainted with Hindu algebra; at all events, according to De Morgan, there is very great similarity between the Hindu algebra and that of Diophantus. He occupied himself chiefly with the class of problems characterized as Diophantine (q.v.). Of his valuable work (the MS. of which was discovered in the 16th c.), *Arithmetica*, consisting originally of 13 books, only six have been preserved. Besides this a book on polygonal numbers is extant.

DIOPSIDE, n. *dī-ŏp'sĭd* [Gr. *dia*, through; *opsis*, appearance—alluding to its occasional transparency]: a variety of the mineral pyroxene occurring in monoclinic prisms. It is a silicate of calcium and magnesium, having the formula, $Ca\ Mg\ (SiO_3)_2$. Iron is occasionally present in considerable amount, replacing the magnesium, and it then graduates towards hedenbergite. It has a hardness of about 6, and a specific gravity of about 3.3. It is usually pale green to nearly colorless and when transparent yields gems of considerable beauty. The finest gems come from Dekalb, New York, where it occurs in transparent crystals varying from colorless to a deep, rich green. Ala, Piedmont, is another celebrated locality.

DIOPSIS, *dī-ŏp'sĭs:* genus of dipterous insects of the same great family with the house-fly, remarkable for the prodigious prolongation of the sides of the head, so as to form stalks for the eyes, which are thus removed to a distance from the body of the insect, almost equalling in some species the length of its wings. All the species are found in warm parts of the Old World.

DIOPTASE, n. *dī-ŏp'tās* [Gr. *dioptis*, a looker through —from *dia*, *optomai*, I see]: a rare hydrous silicate of copper, in fine emerald-green crystals. It occurs in brilliant crystals lining cavities in the copper mines of Clifton, also at Riverside, both in Arizona, but the finest specimens are from Russia. The derivation of the name refers to cleavage planes visible in the interior of the crystals. Other names of the mineral are Emerald-copper, Emerald-malachite, Kupfer-schmaragd, etc.

DIOPTRIC, n. *dī-ŏp'trĭk*, or DIOPTRY [Gr. *dia*, through: *opto*, I see]: the unit, now most used for measurement of optical lenses. A biconvex lens whose focal distance is one metre is taken as supplying the unit (one dioptre, written +1.00 D). A lens whose focal distance is one-half metre is a lens of two dioptrics (written +2.00 D). A biconcave lens that will neutralize a +1.00 D supplies the unit (written −1.00 D) for the minus lenses.

DIOPTRIC, a. *dī-ŏp'trĭk*, or DIOP'TRICAL, a *-trĭ-kăl* [Gr. *dioptron*, something that can be seen through, an instr. for taking heights—from *dia*, *optŏmai*, I see]: assisting the sight in the view of distant objects; pertaining to the science of refracted light. DIOP'TRICS, n. plu. *-trĭks*, that branch of geometrical optics (see OPTICS) which treats of the transmission of rays of light from one medium into another, differing in kind. It consists of the results of the application of geometry to ascertain in particular cases the action of the laws of refraction. When a ray of homogeneous light is incident upon a surface, the angle which its direction makes with the normal or perpendicular to the surface at the point of incidence is in dioptrics, as in catoptrics, called the angle of incidence. The angle which the refracted ray makes with the same line is called the angle of refraction. This being premised, the laws of refraction may be stated: 1. The incident and refracted ray lie in the same plane with the normal, at the point of incidence, and on opposite sides of it: 2. The sine of the angle of incidence, whatever that angle may be, bears to the sine of the angle of refraction a constant ratio dependent only on the nature of the media between which the refraction takes place, and on the nature of the light. According to the second law, if we call the angle of incidence i, and that of refraction r, we shall have $\sin i = \mu \sin r$, where μ is a quantity depending upon the nature of the media and of the light. It will have, for instance, a certain value for refraction from vacuum into glass, another from glass into water, and so on; also it will have one value for red light, another for green, and so on. The quantity μ is called the refractive index, and is greater than 1 when refraction takes place from vacuum into a medium, and in general is greater than 1 when the refraction is from a rarer into a denser medium, and less than 1 when the opposite is the case. In dioptrics, the laws of refraction may be considered as depending for their truth upon experiment; in physical optics, they are deductions from a hypothesis respecting the constitution of light. They are not merely approximately true; they are absolute physical laws.

Before proceeding to consider the simpler leading cases of refraction, one or two interesting propositions in dioptrics require to be explained.—1. If the refractive index for a medium, when light is incident upon it from vacuum, be μ, and the index for another medium, under the the circumstances, be μ', then, when light proceeds from tne second medium into the first, the refractive index is $\frac{\mu}{\mu'}$. The proof of this proposition depends upon the two following experimental laws: (1) If a ray of light proceed from a point P, to another Q, suffering any reflections or refractions in its course, then, if it be incident in the reverse direction from Q, it will follow the exactly reverse course to P. This is proved by experiment, but may be accepted as axiomatic. (2) If a ray pass from vacuum

through any number of media, having their faces plane and parallel, when the ray emerges into vacuum its direction will be parallel to that which it had before incidence. To deduce the proposition from these laws, let i be the angle of incidence from vacuum upon the medium B (fig. 1), r the angle of refraction, which will also be the angle of incidence upon the medium A. Also let r' be the angle of refraction into A, which will also be the angle of incidence upon the second bounding surface of A. By the second of the preceding experimental laws, the angle of emergence into vacuum will be i. Hence we shall have by the first of these laws, $\sin i = \mu' \sin r$ at the first surface, and $\sin i = \mu \sin r'$ at the second. From these equations, we have $\sin r = \frac{\mu}{\mu'} \sin r'$, which proves the proposition. It follows that if μ be the refractive index from vacuum into a medium, that from the medium into vacuum will be $\frac{1}{\mu}$.—2. A second proposition relates to what is called the *critical angle*. If i be the angle of incidence of a ray within a medium, the refractive index of which is μ, and r the angle of refraction into vacuum, then we have from the former proposition $\sin i = \frac{1}{\mu} \sin r$. From this formula, if i be given, r may be found, and a real value will be given to r so long as $\sin i$ is $< \frac{1}{\mu}$; but when i has a value greater than that determined by the equation $\sin i = \frac{1}{\mu}$, the formula fails to give us a value of r, for the sine of an angle cannot be greater than 1. And experiment shows that, in fact, there is no refracted ray when the angle of incidence is greater than that above assigned, the ray being wholly reflected within the medium. The angle of which the sine is $\frac{1}{\mu}$ is called the *critical angle*. For glass, it is about 41° 45′; for water, about 48° 30′. This angle is sometimes called the angle of *total reflection*. In internal reflection at the surfaces of media, the reflected light is more nearly equal in intensity to the incident than in any other case of reflection, While it thus appears that refraction from a denser into a rarer medium is not always possible, it may be added that it is always possible from a rarer into a denser.

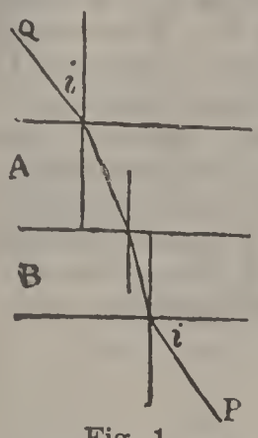


Fig. 1.

We shall now investigate some simple cases of refraction: 1. And first of refraction at a plane surface. Let DIMN (fig. 2) be any medium bounded by a plane DI, and let R be a radiant point, and RD and RI two incident rays of a divergent pencil proceeding from R to the surface of the medium; then RD being perpendicular to the surface,

suffers no refraction, but proceeds along DM within the medium; but RI is refracted in the direction IN, which, produced outward, meets the normal DF in F. Therefore, a small pencil of rays proceeding from R, and having RD, perpendicular to the surface, for axis, will be refracted into another pencil diverging from the imaginary focus F; for all the rays intermediate between RD and RI will converge very near F when the pencil is small. An eye within the medium, and between N and M, would thus, the pencil being small, see the luminous point R, as if it were at F, or further off than it really is. In the opposite case, repre-

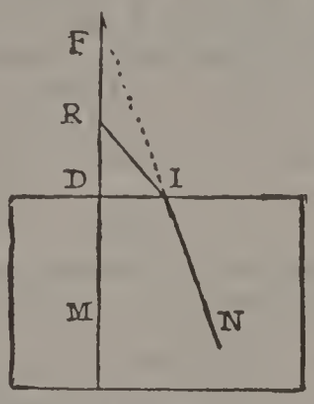


Fig. 2.

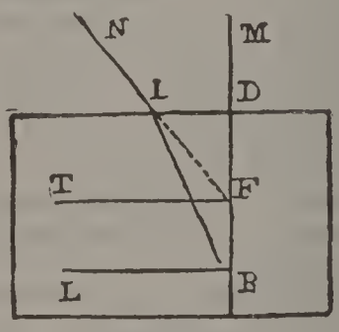


Fig. 3.

sented in fig. 3, R being within the refracting medium, similar reasoning shows that after the rays emerge from the plane surface into the air, they will, if the pencil be small, appear to proceed from an imaginary focus F, nearer to the surface than R, the luminous point.

2. The case of refraction through a prism, which we are next to consider, is, in fact, the case of refraction through a medium bounded by plane surfaces which are not parallel. Conceive two planes at right angles to the plane of the paper, and making on that plane the figure BAC (fig. 4). The question is as to the laws of transmission of a ray, SPQR, of homogeneous light through the prism. Draw mn' and $n'n$ perpendicular to the sides. Then n'PQ and n'QP are respectively the angles of refraction at the first, and of incidence at the second surface. Now, as n'QA and n'PA are each of them right angles, and as all the angles in the figure n'QAP are equal to four right angles, it follows that the angles at n' and at A together are equal to two right angles. But the angle at n', together with the angles n'PQ and n'QP, are equal to two right angles; therefore must the angles n'PQ and n'QP together be equal to the angle at A. In other words, in refraction through a prism: *The sum of the angles of refraction at the first surface, and of incidence at the second, is equal to the angle contained between the plane sides of the prism.* From this it might be

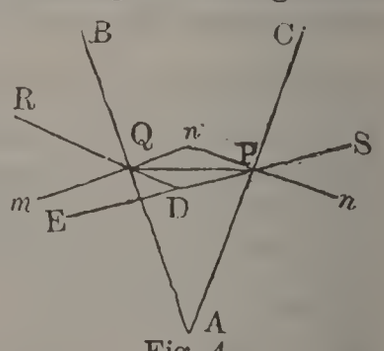


Fig. 4.

shown, that the deviation of a ray caused by passing through a prism is always toward the thicker part of the prism, if the medium be denser than the surrounding atmosphere. It is a geometrical proposition which the student may solve for himself, that if i be the angle of incidence at the first surface, and e that of emergency at the second, and if α be the angle of the prism, then δ, or the change of direction of the ray in its passage, is obtained from the formula $\delta = i + e - \alpha$.

3. We now take up the case of refraction at a single spherical surface of a medium denser than the surrounding air. And first, of parallel rays refracted at a convex spherical surface. Let ABQP (fig. 5) be the refracting medium, whose terminating convex surface is spherical, C being the centre of the surface, and V its vertex. Let XV be the axis of a pencil of parallel rays, of which any ray, RI, is incident at I. Then, if CIN be a normal, the angle of refraction, CIF, will be less than the angle of incidence, RIN, and the refracted ray will thus turn toward the axis, and meet it at some point, F. When the pencil is small,

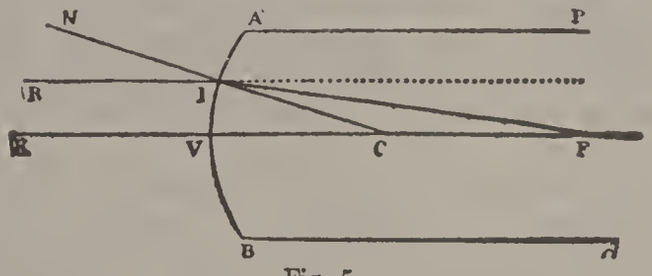


Fig. 5.

or the aperture, AVB, of only a few degrees, the rays will clearly nearly all converge to the same point, F. To find the position of F, we have, in the triangle ICF, the angle CIF$=r$, the angle of refraction, and ICF, the supplement of ICV or NIR (by parallel lines), i.e., of i, or the angle of incidence. Therefore, IF is to CF: : sin i is to sin r. And as for a very small pencil, IF may be taken $=$ VF, we have FV : FC : : sin i : sin r, or: : μ : 1. And putting FV $=$ F, the principal focal distance, and VC $=$ R, we have

$$F = \frac{\mu}{\mu - 1} R.$$

If the medium be crown-glass, for which the value of μ is $\frac{3}{2}$, we have

$$F = \frac{\frac{3}{2}}{\frac{3}{2} - 1} R,$$

or F $=$ 3 R; i.e., the principal focal distance is equal to three times the radius of the sphere. The student may, by similar reasoning, ascertain for himself the focus of parallel rays incident on a concave spherical refracting surface, as also the focus in the case of a pencil of parallel rays within the medium and emerging from it. The case of a divergent pencil is incapable of such elementary treatment as to justify its insertion here. For branches of the subject, treated under separate heads, see Caustic: Lens: Refraction. Under Refraction, is a table of the values of μ—the refractive index for various media and kinds of light. See also Spectrum: Chromatic.

DIORAMA, n. *dī'ō-rȧ'mă* [Gr. *dia,* through; *horāma,* what is seen]: an exhibition of pictures on movable screens raised on a platform or stage, seen by the spectators sitting in a darkened room through a large opening (see PANORAMA). DI'ORAM'IC, a. *-răm'ĭk,* pertaining to.

DIORITE, n. *dī'ō-rīt* [Gr. *diŏros,* a boundary between]: hornblendic greenstone, so named from its being unmistakable in contradistinction to *dolorite* or *augitic greenstone.* DIORITIC, a. *dī'ō-rĭt'ĭk,* pertaining to diorite.

DIORTHOSIS, n. *dī-or-thō'sĭs* [Gr. *diorthoō,* I make straight—from *dia,* through; *orthoō,* I make straight]: in *surg.,* the reduction of a fracture or dislocated bone.

DIOSCOREACEÆ, *dī-ŏs-kō-rē-ā'sē-ē:* natural order of plants, of which the genus *Dioscorea* (see YAM) is type. They are twining shrubs, with large tubers either above or below ground. They are generally classed with endogenous plants; they are among the *Dictyogens* of Lindley. There are about 120 known species. The most important plants of the order are the different species of *Dioscorea* or YAM (q.v.). Black BRYONY (q.v.) is its only representative in the British flora. *Testudinaria elephantipes,* a s. African species, sometimes called *Elephants' Foot,* and *Hottentots' Bread,* has a large fleshy rhizome, with a rough cracked bark, which is used as food by the Hottentots in times of scarcity.

DIOSCORIDES, *dī-ŏs-kor'ĭ-dēz,* PEDANIUS, or PEDACIUS: Greek physician: b. Anazarba, or Anazarbus, in Cilicia; lived in the 1st or 2d. c. He accompanied the Roman armies as physician through many countries, and collected great store of information and personal observation on plants. In his great work, *De Materia Medica,* he treats of all then known medicinal substances and their properties, real or reputed, on the principles of the so-called 'humoral pathology.' Two other works bear the name of D., but their genuineness is very questionable. During 15 centuries, D. maintained undisputed authority in botany and in materia medica, and still holds it among the Turks and Moors. The best editions of D. are by Saracenus (Frankf. 1598), and Sprengel (2 vols , Leip. 1829). The *De Materia Medica* has been translated into the Italian, German, French, and Spanish languages. There is also an Arabic translation in MS. in various libraries of Europe.

DIOSCURI, *dī-os-kū'rī* (Gr. children of Jupiter): name usually applied to Castor and Pollux, twin brothers and offspring of Leda by Jupiter. Festivals in their honor, called *dioscuria,* were celebrated by the people of Corcyra and Lacedæmonia with great glee and athletic sports; and they were devoutly worshipped in Rome, where a magnificent temple was erected to them in the Forum. Castor was hailed as the god of equestrian exercise, Pollux of boxing, and both are represented in art mounted on prancing steeds, carrying spears, and wearing star-bound, egg-shaped helmets. The brothers were noted for their expedition to Attica to rescue their sister Helen from Theseus, their hunting of the Calydonian boar, participation in the Ar-

gonautic expedition, and their combat with the sons of Aphareus. One version of the myth is that Pollux and Helen, destined to be immortal, were born from one egg and Castor and Clytemnestra, granted only mortal existence, from another. Castor was killed in the Aphareus combat, and Pollux prayed Jupiter that he might die also, that the brothers might not be separated. Different versions of the myth vary as to what became of the brothers. One says that Jupiter took mercy on the grief of Pollux, Homer narrates that Castor was restored to life on the condition that both brothers should spend alternate days in Hades, and another version claims that Jupiter placed them both together among the stars, where they now are the chief ones in the constellation of Gemini: see CASTOR and POLLUX.

DIOS'MA: see BUCKU.

DIOS'PYROS: see DATE PLUM: EBONY.

DIOTA, n. *dī-ō'ta* [L.—from Gr. *diōtos*, two-eared—from *dis*, twice, and *ous*, an ear]: a vessel used to contain water or wine. It had a narrow neck, a full body, and two handles, whence the name. The form and size varied, it was usually made tall and narrow, and terminated in a point, which could be set into a stand or into the ground, to keep the vessel upright, in which position several have been found in the cellars at Pompeii.

DIOTIS, n. *dī-ō'tĭs* [Gr. *diōtos*, two-eared; so named from the lobes of the corolla being ear-shaped]: genus of plants, belonging to the nat. ord. *Chenopodiaceæ*.

DIOXIDE, n. *dī-ŏks'īd* [Gr. *dis*, twice; and *oxide*]: in *chem.*, an oxide containing two equivalents of oxygen to one of another element: see MONOXIDE.

DIP, v. *dĭp* [AS. *dippan;* Sw. *doppa*, to dip, to soak Dan. *dyppe*, to dip, to plunge: Dut. *doppen*, and *doopen*, to dip, to baptize; *duypen*, to duck the head]: to put into water for a brief time and then to withdraw; to plunge into a liquid for a moment; to baptize by immersion; to take out as with a ladle; to sink; to look slightly into, or here and there, as into a book; to incline downward: N. inclination downward; depression; in *geol.*, the inclination or angle at which strata slope downward into the earth; the amount or angle of dip is the degree of deviation from a level line or the plane of the horizon; the point of dip is the point of the compass to which the dip is directed—the word *rise* is used as the opposite of *dip;* in *magnetism*, downward inclination of the magnetic needle; a candle made by dipping the wick in tallow. DIP'PING, imp. DIPPED, or DIPT, pp. *dĭpt.* DIPPER, n. *dĭp'pẽr*, the water-ousel. DIP OF HORIZON, the angular depression of the horizon below the true or natural horizon as seen from an elevation above the surface of the earth; at sea, the angle through which the true or natural horizon is depressed by the elevation of the eye of the spectator above the surface of the sea (see DEPRESSION OF THE HORIZON). TO DIP INTO, to enter slightly upon a thing; to read partially.

DIPETALOUS, a. *dī-pĕt′ă-lŭs* [Gr. *dis*, twice *petălon*, a petal]: in *bot.*, having two petals.

DIPHTHERIA, n. *dĭf-thē′rĭ-ă* or *dĭp-*, or DIPHTHERITIS, *dĭf-thĕr-ī′tĭs* [Gr. *diphthĕră*, skin, leather]: disease characterized by inflammation caused by a certain bacillus: see below. DIPH′THERIT′IC, a. *-thĕr-ĭt′ĭk*, relating to, or connected with, diphtheria; tough; like leather.—DIPHTHERIA, formerly defined as a disease characterized by tendency to formation of a leathery membrane in the throat or fauces, is now known to occur on other mucous membranes and in wounds and abrasions. Any inflammation caused by the Klebs-Loeffler bacillus is now considered diphtheria. Some such cases may be extremely mild: on the other hand, many cases characterized by the formation of a membrane in the throat, and presenting symptoms of some severity, have been shown to be due to streptococci (round bacteria in chains), especially those of erysipelas. The old definition depends on observed symptoms, the new one on the essential cause of the disease.

Historical.—Diphtheria is believed to have been recognized in India as early as B.C. 550. Aretæus of Cappadocia, B.C. 100, gave the first unmistakable description of the disease, under the names Ulcus Syriacum and Malum ægypticum. Most of the famous Greek and Roman physicians were familiar with it, but it was lost sight of during the middle ages. It prevailed in Holland in 1337, and epidemics were described by various European physicians in the 16th c. Dr. John Fothergill of London wrote a treatise on 'Putrid Sore Throat,' 1745, on which little practical advance was made till the present generation. Diphtheria was known in this country before 1700. Dr. Samuel Bard, Washington's physician, described the New York epidemic 1770, in Vol. 1 of the Transactions of the American Philosophical Soc. Brettoneau of Tours, in a series of papers published 1821–26, first used the term *diphtheria*. Klebs, in 1883, described the bacillus (rod-shaped germ), proved by his own and Loeffler's researches to be the true cause of diphtheria. Behring, Kitasato, and Roux, 1893–4, developed the treatment by antitoxin, referred to below.

Causes.—Most cases occur between the ages of 3 and 15 years, and among adults, physicians, nurses, and teachers are especially liable to the disease. Cases are more numerous in cold weather because of increased indoor occupation, especially at school, and because colds and the lessened vitality at a season when open-air exercise is diminished, predispose. Diphtheria prevails to a greater extent in cities on account of increased facilities for contagion, but some of the most severe cases occur in the country. Water has not been proved to be a source of infection, but epidemics have been clearly traced to a contaminated milk supply. Clothes, bedding, utensils, remnants of food, books, domestic animals, flies, visitors to the sick-room—including physicians and nurses—may carry germs. The disease is, however, apparently not so contagious as scarlet fever and measles.

DIPHTHERIA.

General character and relations.—There has been much dispute whether diphtheria is a local or systemic (general) disease. It is obvious that a local source is necessary to a systemic involvement, yet experience shows that the degree of the latter varies greatly and does not depend on the size of the leathery membrane. Germs have been shown present as foreign bodies in the throats of perfectly healthy persons: nurses at diphtheria cases have gone about their duties complaining only of slight indisposition, but have later coughed up a diphtheritic membrane or have manifested the paralysis that often follows diphtheria. Thus the relative importance of local and systemic manifestations varies in different cases. The local change consists in an inflammation, with outpouring of white blood cells as in any inflammation, and both epithelial and white blood cells die in the conflict with the germs. A 'coagulation necrosis' results, forming a membrane which penetrates to a varying depth, and may involve structures below the mucous membrane proper. The usual site of the membrane, i.e., of the local manifestation of diphtheria, is in the pharynx, fauces, and tonsils, but it may be in the larynx, trachea, bronchial tubes, nose, tear-duct, eye, eustachian tube, ear, esophagus, and possibly in the stomach; or the bladder, lower bowel, genital organs, or external wounds may become involved, either primarily or secondarily. The kidneys are usually mildly irritated so that the urine contains albumin. Sometimes there is an actual inflammation, when tube casts appear. The spleen and liver are somewhat enlarged, as in almost any infectious disease. The heart muscle is apt to degenerate. Bronchitis or broncho-pneumonia and collapse of areas of lung are usual in severe cases. Paralysis of the muscles of the palate, and occasionally of other parts of the body, occurs during convalescence in 10 to 20 per cent. of all cases.

Symptoms.—The interval between infection and the development of the first symptoms in a case due to direct infection is usually two or three days. When fewer and less virulent germs are implanted in the throat, they usually produce no symptoms for a week or ten days. The invasion is like that of any moderately severe fever, with chilliness though seldom an actual chill, moderate rise of temperature, and pains in the back and limbs. Even at this time, there is usually apparent a redness of the throat, but it cannot be distinguished from that of a simple cold. The membrane appears in a day or two, first as little yellowish or whitish patches on the tonsil, against a red or purplish-red background. These patches gradually coalesce to form a membrane of the yellowish color and almost the thickness of buckskin. If detached, a raw surface is left. Swallowing is somewhat difficult, but there is little soreness. In average cases, the temperature does not rise beyond 103°, Albuminuria (q.v.) is almost invariable, though seldom marked or protracted, and serious involvement of the kidneys is much rarer than in scarlet

fever. The lymphatic glands of the neck—or of the part involved—are enlarged. In favorable cases without invasion of the larynx or nasal passages, recovery generally takes place in from 3 to 10 days. An invasion of the nose produces a foul discharge and an obstruction to breathing. Deafness, pain in the ear, and finally rupture of the drum and appearance of a discharge, indicate that local process has involved the middle ear through the eustachian canal. Hoarseness, difficult and high-pitched respiration, drawing in of the soft parts between, above, and below the ribs, blueness from improper oxygenation of the blood, metallic cough, form the picture of laryngeal diphtheria, whether primary, or secondary to diphtheria of the pharynx. Malignant cases are usually fatal within a day or two, without much apparent local disease.

Diagnosis.—The appearance of a grayish membrane in the throat or elsewhere, with febrile symptoms including albuminuria, enables one to make an almost certain diagnosis. Before the membrane forms, positive diagnosis is impossible except from bacteriological examination, which is the most satisfactory method at all stages. If the membrane forms below the larynx or in any other inaccessible place, a positive diagnosis can scarcely be made—certainly not in the absence of grave systemic symptoms—till the membrane is coughed up or post-diphtheritic paralysis occurs, after the disease is at an end. A croupous membrane similar to that of diphtheria may be due to inhalation of steam, ammonia, chlorine, or other irritating gases. Follicular tonsilitis presents the appearance of an inflamed tonsil with little yellowish patches resembling the early form of the true diphtheritic membrane. This condition is due usually to streptococci (round bacteria in chains), sometimes to the particular streptococcus of erysipelas. As considerable systemic depression may be present, the diagnosis depends almost entirely on bacteriological examination. Scarlet fever, measles, small-pox, and herpes may be accompanied with corresponding lesions in the throat, except for differences due to the moistness and softness of the mucous membrane, or true diphtheria may coexist. On the other hand diphtheria may be attended by an erythematous or urticarial rash so that diagnosis may be very difficult.

Different epidemics of diphtheria vary greatly in severity, the death-rate in the days before the introduction of anti-toxine ranging from 10 to 50 per cent. A very high or remarkably low temperature, a very rapid or slow or weak pulse, extensive sloughing, cyanosis, convulsions, unconsciousness or other nervous symptoms, urinary casts indicating inflammation of the kidneys, a rapid and malignant onset of the disease, all foretell an unfavorable result. Other things being equal, involvement of the larynx, the nose, or the ear is more serious than of the pharynx.

Treatment.—The indications are: 1. To sustain the general strength; 2. To sustain the heart, which is particu-

larly prone to degeneration; 3. To make the system artificially resistant to the diphtheria germs and their secretions; 4. To remove the local disease; 5. To guard against inflammatory and other complications, and to attend to various symptoms.

The *first* indication includes rest in bed, and nourishment with the best food; it should not be given oftener than every two hours. Rectal nourishment may be necessary.

The *second* indication is exceedingly important, for heart failure from degeneration is *the* cause of death in diphtheria. There may be no warning in the pulse; so that rising in bed, even to empty the bowels, should be strictly forbidden.

The *third* indication is the one the fulfillment of which has robbed diphtheria of most of its former terrors. Diphtheria antitoxin is obtained by injecting into a horse at intervals of a few days, gradually increasing doses of a culture of diphtheria bacilli. After a while the blood serum of the animal is found to have acquired the property of antidoting the poison of the disease. The animal is now bled and the serum is separated from the corpuscles of the blood and preserved in sealed glass tubes or ampullæ. This is the antitoxin, and if it is given in sufficient amount and early in the course of the disease, a cure is almost certain to result. As antitoxin acts in the way of prevention as well as of cure, it should be injected as soon as there is a suspicion of the nature of the disease without waiting for the diagnosis to be established.

The local disease may be removed (*fourth* indication) by use of antiseptics, or of digestants which will dissolve away the membrane. The best antiseptic wash is a saturated solution of boric acid with or without the addition of chlorate of potassium. The antiseptic should be used before feeding, so that poisonous matter may not be carried to the stomach; also after feeding, to leave the throat as clean as possible. It may be used also in the intervals, but not so often as to interfere with sleep. The *fifth* set of indications includes the use of anodynes, hypnotics, cathartics, external applications, etc. In laryngeal diphtheria a warm moist atmosphere is advocated, as in the treatment of croup. The bed may be covered with a tent while a kettle of lime-water, or of water variously medicated, is kept boiling within. Care should be taken that the air within the tent does not become foul. When obstruction to breathing becomes marked, the larynx or trachea should be opened, and a canula inserted; or intubation—due to O'Dwyer of New York—should be performed. Though intubation involves no use of the knife and leaves no scar, it requires more skill; and the statistics for both methods are about the same—rather less than a third of all patients recovering. At the present day the early use of antitoxin has obviated to a great extent the necessity of a resort to either of these operations.

Patients with diphtheria, as any infectious disease, should be treated in a room bare as possible of furniture,

especially carpets and draperies. A sheet wet with some antiseptic solution should be hung over the door, and everything emanating from the sick room should be considered a source of danger. All excretions should be disinfected before they are emptied into the usual receptacle. Napkins, towels, handkerchiefs, clothing, dishes, etc., should be boiled for half an hour before being used elsewhere. Only necessary attendants should be allowed to enter the room, and they should be isolated as far as possible. Pet animals and toys have carried infection. Kisses are dangerous; the exposure of a corpse or the cherishing of infected relics is criminal. Funerals should be private, and cremation should be preferred to burial. Most boards of health placard houses in which diphtheria is in progress, and prohibit members of the household from attending school or other places where children assemble. Physicians and nurses should disinfect their persons and clothing before attending other cases, especially surgical or obstetrical cases. The period of quarantine is usually stated as four weeks from the subsidence of febrile symptoms; but diphtheria germs have been found five or six weeks after this time, so that a safer and less arbitrary rule would be to require in every case that a bacteriological examination of the secretion from the throat should show absence of the germs. The sick-room should be thoroughly disinfected at the close of the quarantine by fumigation with formaldehyde; the walls, ceiling, floor, window and door-casings being scrubbed with an antiseptic solution. Cheap articles of furniture should be burned; and, wherever practicable, boiling is preferable to chemical disinfection.

DIPHTHONG, n. *dĭp'thŏng* [F. *diphthongue*—from Gr. *diphthonggos*, with two sounds—from Gr. *dis*, twice; *phthonggos*, a sound: L. *diphthongus*, a diphthong]: two vowels sounded together, or made to sound as one vowel, in the same syllable; the union of two vowels in one sound, as in *out;* in this combination the sound is really composed of an *a* as heard in *father*, and a *u* as heard in *put*. Many double vowels in English are not real diphthongs, there being only one sound heard. The spelling of the English language has little or no relation to the pronunciation in this matter. In many syllables written with two vowels, only one sound is heard, as in *bread*. The single vowel letters, again, often have a diphthongal sound; thus the long sound, as it is called, of *i* is really composed of the sound of *a*, as heard in *father*, and that of *e*, in *me*. Such words as *bread*, *field*, now monophthongs, were doubtless at one time real diphthongs, and are still so pronounced in many parts of England. DIPHTHON'GAL, a. *-thŏng'găl*, pertaining to a diphthong. DIPHTHON'GALLY, ad. *-lĭ*.

DIPHUCEPHALA, n. *dī-fū-sĕf'a-la* [Gr. *diphuēs*, of double nature or form; *kephalē*, a head]: genus of coleopterous insects, belonging to the family *Scarabæidæ*.

DIPHYDES, n. *dīfĭ-dēz,* or DI′PHYDÆ, *-dē* or DI′PHYES, *-ēz* [Gr. *diphuēs,* of double nature or form]: genus of free, swimming *Hydrozoa,* belonging to the order *Siphonophora*- sub-order *Calycophoræ,* and typical of the family *Diphydæ.* It has two swimming-sacs, one placed as it were within the bell of the other.

DIPHYLLOUS, a. *dĭ-fĭl′lŭs* [Gr. *dis,* twice; *phullon,* a leaf]: having two leaves.

DIPHYODONT, n. *di-fī′ŏ-dŏnt* [Gr. *dis,* twice; *phŭō,* I generate; *odontēs,* teeth]: one of those mammals which have two sets of teeth: ADJ. pertaining to.

DIPHYOZOOID, n. *dĭ-fĭ-o-zō′oyd* [Gr. *diphuēs,* of double nature or form; *zōon,* an animal; *eidos,* appearance]: one of the detached reproductive portions of adult members of that order of oceanic *Hydrozoa* called *Calycophoridæ.* They swim about by means of their calyx.

DIPHYSCIACEÆ, n. plu. *dī-fĭz-sĭ-ā′sē-ē* [Gr. *dis,* twice; *phuskion,* a kind of bean]: family of operculate acrocarpous mosses, having a capsule of very curious structure, being large, oblique, and gibbous; inflorescence monœcious. DIPHYSCIUM, n. *dī-fĭs′sĭ-ŭm,* genus of acrocarpous mosses the type of the family *Diphysciaceæ.*

DIPLACANTHUS, *dĭp-la-kăn′thŭs:* genus of fossil ganoid fishes, peculiar to the old red sandstone, in which six species have been found. The body was covered with very small scales, and the tail was heterocercal. There were two dorsal fins, which with each of the other fins were furnished with a strong spine in front, the base of which was simply imbedded in the flesh, as in the dog-fish, and not articulated, as in the siluroids. The head was large, and the mouth wide, and opening obliquely.

DIPLAX, n. *dī′plăks* [Gr. double-folded]: genus of *Rotatoria,* belonging to the family *Euchlanidota,* and forming a connecting link between *Salpina* and *Dinocharis;* carapace cleft down the back, and destitute of spines back and front; foot and toes long and slender.

DIPLAZIUM, n. *dĭ-plāz′ĭ-ŭm* [Gr. *diplazō,* I double: so named because the indusium is double]: genus of *Polypodiaceæ.* The rhizomes of *D. esculentum* are occasionally eaten.

DIPLEIDOSCOPE, n. *dĭ-plī′do-skōp* [Gr. *diploos,* double; *eidos,* appearance; *skopeō,* I see, I view]: an optical instrument for indicating the passage of a heavenly body over the meridian by the coincidence of two images formed by a single and double refraction from a triangular prism which has one transparent and two silvered planes, one of the latter being in the plane of the meridian.

DIPLODACTYLUS, n. *dĭp-lo-dăk′tĭl-ŭs* [Gr. *diploos,* double; *daktulos,* a finger, a toe]: genus of lizards belonging to the family *Geckotidæ:* see GECKO.

DIPLODONTUS, n. *dĭp-lo-dŏn′tŭs* [Gr. *diploos,* double; *odous,* a tooth]: genus of *Arachnida* of the order *Acarina* and family *Hydrachnea,* having the mandibles terminated

by a straight, acute, and immovable tooth, to which is attached a movable hook or claw.

DIPLOE, n. *dĭp′lō-ē* [Gr. *diplŏŏs*, double, twofold]: in *anat.*, the network of bone tissue which fills up the interval between the two compact plates in the bones of the skull; in *bot.*, the cellular substance of a leaf.

DIPLOGRAPSUS, *dĭp-lō-grăp′sŭs:* genus of fossil zoophytes, differing from the Graptolite (q.v.) in having a double series of cells. They are found in great abundance in the anthracitic shales of the Silurian measures.

DIPLOGRAPTOLITES, n. plu. *dĭp′lō-grăp′tō-līts* [Gr. *diplŏŏs*, double, and Eng. *graptolite:* in *geol.*, that section of graptolites in which the cells are arranged in two rows like the feathers of a quill.

DIPLOMA, n. *dĭ-plō′mă* [Gr. and L. *diplōma*, a letter folded double, a state letter of recommendation—from Gr. *diplŏŏs*, double: F. *diplôme*]: a parchment or formal writing, under seal, and signed by officials, conferring some privilege, honor, or power. The term originated in the ancient custom of writing solemn documents on two tables of wax, which were doubled, or laid one upon the other (see DIPTYCH), or on writing material which was folded. The Roman emperors were in the habit of giving diplomas to public servants, and to couriers, to enable them to procure the use of the public servants and horses; hence diploma came to signify a royal charter or prince's letters-patent. The term is now applied mostly to instruments given by universities and other learned societies, in proof of the holder having attained a certain degree; or to the licenses held by professional persons to practice their right, DIPLO′MACY, n. *-mă-sĭ*, the art and practice of negotiating state matters with foreign nations, and the forms usually employed; political skill; dexterity or astuteness in the management of any piece of business. DIPLO′MATE, v. *-māt*, to invest with a privilege, etc., by a diploma. DIPLO′MATING, imp. DIPLO′MATED, pp. DIPLO′MATIST, or DIPLOMAT, n. *-mă-tĭst*, one skilled in diplomacy; a statesman. DIPLOMATIC, a. *dĭp′lō-măt′ĭk*, or DIP′LOMAT′ICAL, a. *-ĭ-kăl*, pertaining to diplomacy; authorized by credentials or letters to transact business for a sovereign at a foreign court; pertaining to the foreign ministers at a court, who are called the DIPLOMATIC BODY. DIP′LOMAT′ICALLY, ad. *-lĭ*. DIP′LOMAT′ICS, n. plu. *-măt′ĭks*, the science of ancient writings, and the art of deciphering them, and determining their age and authenticity, etc.: this term has latterly given place to the more descriptive term PALÆOGRAPHY (q.v.).

DIPLO′MACY: art of managing the intercourse and adjusting the relations between states or nations, as committed to ambassadors, envoys extraordinary, consuls, etc. The principles and rules of diplomacy are embodied partly in those international customs and usages which constitute what may be called common, and in those treaties which may be regarded as statute international law. The principal objects of diplomacy have always been and

are to-day to preserve the independence, rights and security of state and nation. Under diplomacy has been preserved the European 'balance of power,' the prevention of general wars and the securing of commercial advantages under treaty regulations. In the past there have been many international and other conventions or congresses of diplomats, to preserve the peace of the world and to settle differences of international moment. Such was the congress of Westphalia held in 1648, to settle the issues involved in the Thirty Years' War; the Congress of Vienna (1814–15); and the more recent Hague conference (1899) held at the instance of the Czar of Russia, for the promotion of the peaceful settlement of international differences among civilized nations. In the various countries, under modern methods and conditions, the usual instruments of diplomacy are: (1) the secretaries of state for foreign affairs; (2) regular diplomatic agents or representatives of various grade ranging from ambassadors to *chargés d'affaires* or consular agents; (3) special embassies and diplomatic agents or representatives appointed for the accomplishment of a particular purpose, as the case of the Alaskan Boundary Commission at London (1903). Prior to the 15th c. diplomats were of the last named class. The arrangement of international ceremonies belong also to the subject of diplomacy. This involves some customary and conventional modifications of the general principle of international law by which all independent states are held to be equal. Ambassadors are not subject to the municipal laws of the states in which they reside, the theory being that they represent the persons of their respective masters, or are the personalization of their governments, and that these cannot be subject to any other laws than those of their own country. If an ambassador offends against the municipal law, or abuses his character, he may be sent home, and accused before his master. Though there was much doubt on the point, this rule seems to extend to crimes against natural law, e.g., murder, as well as to crimes artificially created by the policy of the particular state. See AMBASSADOR; EMBASSY; MINISTER.

DIPLOMITRIDÆ, n. plu. *dĭp-lo-mĭt′rĭ-dē* [Gr. *diplŏŏs*, double; *anitrion*, dim. of *mitra*, a belt or girdle]: family of flowerless plants, order *Jungermanniaceæ* (scale mosses). DIPLOMI′TRIUM, n. *-mī′trĭ-ŭm*, an old order of flowerless plants, now made a synonym of Hollia.

DIPLOPAPPEÆ, n. plu. *dĭp-lo-păp′pē-ē* [Gr. *diplŏŏs*, double; *pappos*, the down on the seeds of certain plants, such as the dandelion]: sub-tribe of composite plants, tribe *Asteroideæ:* see ASTER. DIPLOPAPPUS, genus of composite plants, type of the sub-tribe *Diplopappeæ*.

DIPLOPERISTOMI, n. plu. *dĭp′lō-pĕr-ĭs′tŏ-mī* [Gr. *diplŏŏs*, double; *peri*, about; *stoma*, a mouth]: mosses which have a double peristome. DIPLOPERISTOMOUS, a. *dĭp′lō-pĕr-ĭs′tŏ-mŭs*, having a double peristome.

DIPLOPIA, [*dĭplŏŏs* twofold or double + o p s eye]: [Ger. *Doppelsehen;* Fr. *diplopie;* Ital. *diplopia*]: the condition in which a single object is seen double. It may be monocular or binocular. Monocular diplopia is due to imperfections in the refracting media of the eye, or to retinal disease. It may be demonstrated by means of a prism. The commonest and most important forms of diplopia are binocular. A common demonstration of it is to turn one eyeball by pressing upon it; another good demonstration of it is to hold a finger ten inches in front of the eyes and a pencil ten inches farther away in the same line; when we converge the eyes upon the pencil we see two fingers, and when we converge the eyes upon the finger we see two pencils. This proves that with two eyes we can get a single image of only one region at a time. In the wonderful economy of mental life, we have learned to neglect, i.e., not to see the doubling of objects although the conditions are present for it in every complex situation we see with two eyes. Pathological binocular diplopia occurs when there is maladjustment in the large muscles of the eye which prevents the images from falling on corresponding points (q.v.). One image is usually stronger than the other and often is neglected, as in the case of a cross-eyed person.

DIPLOPTERA, n. *dĭ-plŏp'tĕr-a* [Gr. *diplŏŏs*, double; *pteron*, a wing]: a division of hymenopterous insects, comprising the three families *Eumenidæ*, *Masaridæ*, and *Vespidæ* (wasps, q.v.).

DIPLOPTERUS, *dĭp-lŏp'tĕr-ŭs:* genus of fossil ganoid fishes, four species of which have been discovered in the old red sandstone, and two in the carboniferous series. They have heterocercal tails, with double anal and dorsal fins, opposite each other, but having the dorsal pair a little apart. The head is large and flattened, and the teeth are fewer and larger than in the allied genera. The scales are perforated.

DIPLOSTEMONOUS, a. *dĭp'lō-stē'mŏ-nŭs* [Gr. *diplŏŏs*, double; *stēmōn*, the thread called the warp, *stēmŏnos*, of the warp—from *histēmi*, I cause to stand, the ancient looms being upright]: in *bot.*, having a double row of stamens, often double the number of the petals or sepals.

DIPLOSTYLUS, n. *dĭp-lo-stī'lŭs* [Gr. *diplŏŏs*, double; *stulos*, a pillar]: a genus of small shrimp-like crustaceans, from the coal formation of Nova Scotia.

DIPLOTAXIS, n. *dĭp-lo-tăk'sĭs* [Gr. *diplŏŏs*, double; *taxis*, arrangement]: genus of *Crucifera*, comprising about twenty species of herbaceous plants.

DIPLOZOON, n. *dĭp-lo-zō'ŏn* [Gr. *diplŏŏs*, double; *zōon*, an animal]: genus of *Entozoa*, family *Trematoda*, consisting of parasitical worms which infest the gills of the bream, carp, roach, etc., and have the appearance of two distinct bodies in a state of conjugation in the form of an X or St. Andrew's cross, the two bodies being of different sexes, soft, elongated, and flattened, and each terminated posteriorly

by a transverse, oval, or almost quadrilateral expansion, furnished with four suctorial disks.

DIPNEUMONEÆ, n. *dĭp-nū-mō′nē-ē* [Gr. *dis*, twofold *pneumōn*, a lung]: a section of *Araneidæ*, or spiders, comprising such as have two pulmonary sacs.

DIPNOI: see LEPIDOSIREN.

DIPODIDÆ, n. plu. *dī-pŏd′ĭ-dē* [Gr. *dis*, twofold; *pous*, a foot]: the jerboas (q.v.), a widely distributed family of hopping rodents.

DIPPEL, *dĭp′pĕl*, JOHANN CONRAD, German mystic and alchemist: b. Frankenstein, near Darmstadt, 1673, Aug. 10; d. Berleburg, Prussia 1734, April 25. He led a wandering life for many years, involved in difficulties political and theological, and he finally wrote a tract which appears to have ruined him with all parties, and to have provoked replies in the same spirit as that in which the attack had been made. He now fell in with some alchemical books, and at once threw himself into the search for the philosopher's stone. In this also he was assisted by others, who hoped to profit by the discovery, but when no result was obtained, and the money was not forthcoming, Dippel retired to Berlin, where he induced some persons of rank and wealth to help in the search. During his residence here he produced what is known as Dippel's Oil (q.v.), from which followed indirectly that of Prussian blue—an accidental discovery, it is true, but one of a class that could hardly have been made but for the constant and multifarious, though not well-directed labors, of such men as Dippel.

DIP′PEL'S ANIMAL OIL, called also Empyreumatic Animal Oil, or Rectified Oil of Hartshorn: prepared by the destructive distillation of bones in close vessels, when BONE-BLACK (q.v.) is left on the retort or vessel, and the crude oil distils over into a suitable receiver. When obtained in this manner, it is a thick viscid oil of a brown color, and a very disagreeable odor, but on redistillation it may be obtained limpid and colorless. Air and light affect the pure or rectified oil, and render it colored and somewhat viscid. Its elementary constitutents are carbon, hydrogen, nitrogen, and oxygen, and it contains a number of volatile organic bases, such as analine, picoline, etc. Dippel's animal oil is a powerful medicinal agent, and when swallowed in doses of a few drops, it is antispasmodic, and stimulates the vascular and nervous systems. In large doses, it is a powerful irritant poison.

DIPPER, DIPPING, etc.: see under DIP.

DIP′PER (*Cinclus*): genus of birds of the thrush family (*Merulidæ*), distinguished from the other birds of that family by an almost straight, compressed, sharp-pointed bill, and still more by their manners and habits. They frequent clear pebbly streams and lakes, feeding chiefly on mollusks and on aquatic insects and their larvæ, which they seek even under water, diving with great facility, and

moving about for a short time at the bottom of the water. They carry their rather short tail elevated after the manner of wrens, which they also resemble in their 'frequent becks' or dipping of the head, accompanied with an upward jerking of the tail. One species is found in Britain, the Common Dipper, or Water Ousel (*C. aquaticus*), a bird rather smaller than any of the British thrushes, of a generally dark-brown color, with throat and upper part of the breast pure white. It is found throughout Europe and the north of Asia, but chiefly in hilly or mountainous districts. It is not gregarious. The dipper never fails to attract notice, as it sits upon some stone in the midst of or beside the stream, its white breast rendering it conspicuous as it repeats the movement from which it derives its name. It builds a very curious nest of interwoven moss, domed and with the entrance in the side, usually in some mossy bank close by a stream, and often near or under a cascade. The assertion which has been made, that the dipper walks without apparently muscular effort at the bottom of the water, is incorrect; its feet are not well formed for walking, and it moves under water by means of its wings—which are short—not without much muscular effort. The statement also often made, that it eats the spawn of salmon and other fishes, in the belief of which it is much persecuted in Scotland, has never been authenticated. Other species of dipper are found in Asia and N. America. In Scotland, the dipper is called the Water Crow.

DIP'PING-NEEDLE: magnet swinging on a horizontal axis, to show the magnetic dip, i.e. the vertical angle which the magnet freely suspended makes with the horizon. If a magnetic needle be supported so as to be free to move vertically, it does not at most places on the earth's surface rest in a horizontal position, but inclines more or less from it. If the vertical plane in which the needle moves is the magnetic meridian of the place, the angle between the needle and the horizontal line is called the dip or inclination of the needle. Thus, if the needle, NS, be supported at its centre, C, so as to be free to move vertically, the plane of the paper being supposed to be that of the magnetic meridian, the angle N*Ca* is the dip. The dip of the magnetic needle at any place can be ascertained with very great exactness by means of the dipping-needle, fig. 2. It consists of a graduated circle, AA, fixed vertically in the frame FF, and moving with it and the vernier V, on the horizontal graduated circle HH. This last is supported by a tripod furnished with levelling screws. At the centre of the circle, C, there are two knife-edges of agate, supported by the frame, and parallel to the plane of the circle. The needle, NS, rests on these knife-

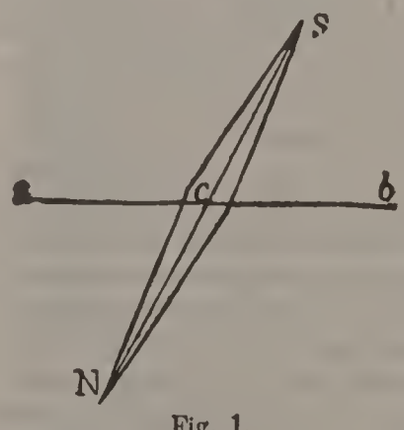


Fig. 1.

edges by means of two fine polished cylinders of steel, which are placed accurately at the centre of the needle, and project at right angles from it: so adjusted, the needle moves with little or no friction. It is so made, moreover, that before being magnetized it remains indifferently in any position; after magnetization, therefore, the dip which it shows is wholly due to the magnetic influence of the earth.

In order to understand how an observation is made with the dipping-needle, we must regard the directing force of the earth's magnetism exerted upon the poles of the needle in any vertical plane in which it may happen to be, as resolved into two forces, one acting at right angles to the plane, and the other acting in the plane. There being a corresponding but opposite force at each pole, there are thus two statical couples acting on the needle—one tending to turn it at right angles to the plane in which it moves,

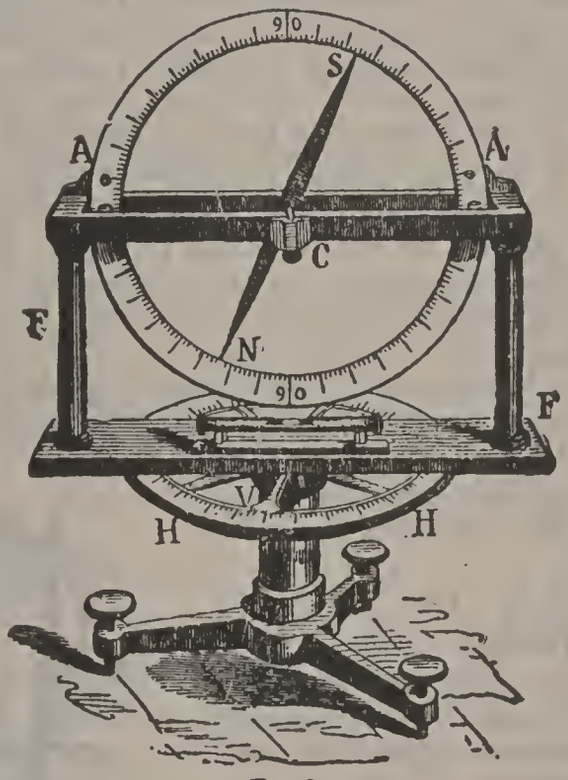


Fig. 2.

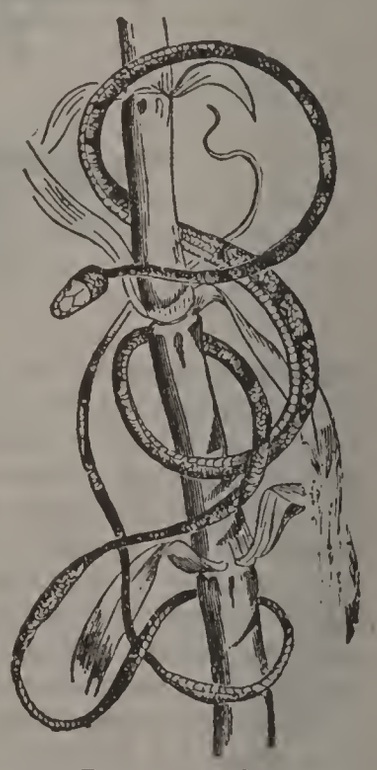
the other tending to bring it round to a position in the plane, such that the needle and the forces of the couple may be in a line. In the dipping-needle, the mode of support completely neutralizes the first of the couples; and the position that the needle takes in any plane is due wholly to the second. When the plane of the needle is at right angles to the magnetic meridian, the forces of this latter couple act vertically, and bring the needle to the same position. This, then, gives the means of determining the magnetic meridian, for we have only to bring the vertical circle round till the needle stands at 90° to put it in a plane at right angles to that meridian; and then by moving the vernier on the horizontal circle over 90°, we place the upper circle and needle in the plane of the mag-

netic meridian. The dipping-needle thus serves the purpose of a Declination Needle (q.v.). In bringing the needle round from the plane at right angles to the magnetic meridian, the dip is less and less, till it becomes least in the plane of that meridian. We might thus also find the magnetic meridian, for it is that plane in which the dip of the needle is least. When the needle is in the plane of the magnetic meridian, the couple which acts in other vertical planes at right angles to them disappears, and the whole force of the terrestrial magnetism acts at each pole of the needle, forming a couple which swings the needle round till it stands in a line with itself. The degree on the circle then pointed to by the needle is the dip at the place of observation. Two readings are necessary, for the reason stated in the DECLINATION NEEDLE. One reading is taken, the needle is then reversed so as to change its supports, and then a second reading is noted, and the mean of the two gives the correct reading. The position of the needle when the dip is read off is manifestly the same that a needle suspended in air, if that were possible, and free to move in any way, would finally assume. In resolving, therefore, the total directive force of the earth as we have done above, we must keep in mind that it always acts parallel to the direction of the dipping-needle.

DIPROTODON, n. *dĭp-rŏt′ŏ-dŏn* [Gr. *dis*, twice; *protos*, first; and *odous* or *odonta*, a tooth]: a gigantic fossil animal, nearly related to the kangaroo, found in the Upper Tertiary beds of Australia. DIPROTODON′TIA, *-shĭ-a*, a primary group of the *Marsupialia*, consisting of genera which have only two lower incisors, the canines rudimentary or wanting, and the molars generally with broad grinding crowns. It contains the kangaroos and phalangers.

DIPSA′CEÆ AND DIP′SACUS: see TEASEL.

DIPSAS, n. *dĭp′săs* [Gr. *dipsas*—from *dipsa*, thirst]: genus of non-venomous serpents of the family *Colubridæ*, of very elongated form, and with a thick, broad, and obtuse head. Their bite is said to produce extreme thirst. They are tree-snakes, inhabitants chiefly of the warm parts of Asia and America. One species only, *D. fallax*, somewhat doubtfully referred to this genus, occurs in the south of Europe. Some of the species are of great size. The figure represents a large and beautiful species found in Java and Sumatra. The form is more attenuated than in others of the genus.



Dipsas cyanodon.

DIPSOMANIA, n. *dĭp'sō-mā'nĭ-ă* [Gr. *dipsa*, thirst; *manĭă*, madness:] a diseased state involving a periodical propensity to drunkenness. DIP'SOMA'NIAC, *-nĭ-ăk*, one who has an irresistible propensity to drunkenness.—*Dipsomania*, also *Oinomania* [Gr. *oînos*, wine], used by German writers, and the English *Drinking Insanity* designates a disease involving a confirmed and irresistible or insane craving for alcoholic stimulant. It is of importance to distinguish dipsomaniacs from the ordinary intemperate and drunken. The subject of dipsomania is not an habitual drunkard or even a hard drinker, but is often a total abstainer in the intervals of his attacks. The disease is a neurosis or form of mental uncquilibrium characterized by attacks of an irresistible impulse to drink to excess of alcoholic liquors. The attacks occur periodically or at irregular intervals, sometimes without any evident exciting cause, at other times induced by some unusual mental or physical strain. The paroxysm is usually preceded for some days by a feeling of malaise, listlessness, constipation, loss of appetite, and inability to sleep. Gradually the patient begins to think of liquor, then comes the desire to drink, which may be fought off for a time, but grows in intensity until struggle against it as he may, the impulse conquers; the sufferer begins to drink and then does not cease until he has drunk himself into a condition of insensibility. Upon recovery from this paroxysm the impulse may be gone, or there may be a succession of drinking bouts continuing over a period of a week or more. Finally the craving ceases, often abruptly, and the patient returns to his normal state, often loathing the thought of alcohol and abstaining strictly until another attack, possibly after an interval of months or even years, comes on.

The disease begins in early life, sometimes even in childhood, and seldom manifests itself for the first time in those past middle life. It occurs usually in those of neuropathic heredity. There may not be a history of dipsomania in either parent, but there is frequently epilepsy or some other form of nervous disease in the family. The term is often applied to any form of alcoholic intemperance, or inebriety, but it is an entirely different condition and is allied to other forms of paroxysmal impulses, such as cleptomania or pyromania.

The treatment should be directed toward a toning up and strengthening of the nervous system, and an avoidance of mental or physical strain. An impending attack may sometimes be averted by diversion of the mind, a change of scene, nourishing food, the relief of constipation, and the securing of sleep. When an attack is fully developed little can be done except to nurse the patient and guard him from injury. Hypnotics may be advisable, for deep and prolonged sleep is sometimes curative. It is better, in the case of true dipsomania, to supply the patient with the alcohol he craves in his own home and to care for him there, rather than to let him wander off to public drinking places. If the patient, at the first suggestion of

an approaching attack, will voluntarily place himself under restraint in a sanitarium, judicious treatment may then arrest the paroxysm by subduing the craving, but home treatment is seldom or never effective. See INEBRIETY; INSANITY; INTOXICATION; TEMPERANCE.

DIPSOSIS, n. *dĭp'so-sĭs* [Gr. *dĭpsaō*, I thirst]: a morbid thirst; excessive desire of drinking.

DIP'TERA, *dĭp'terâ:* order of insects, which received from Aristotle the name it still bears. Its distinguishing characters are so obvious that it has been acknowledged, with little change of its limits, by almost all naturalists. FLY is a popular name very generally applied to dipterous insects, and often with some distinguishing prefix (as House-fly, Flesh-fly, Blow-fly, Bot-fly, Crane-fly, etc.), though it is sometimes used with such prefix to designate insects not belonging to this order (Dragon-fly, Day-fly, Mat-fly, etc.). Midges, gnats, and mosquitoes also are dipterous insects. In the number of species which it contains, this is one of the most extensive orders of insects: some of the species are remarkable also for the immense multitudes in which they appear; and though most of them are of small size, and few attract the eye by brilliant hues, not a few are important on account of the annoyance or mischief which they cause, either in their perfect or in their larva state; while many of their larvæ (maggots) are very useful in consuming putrescent animal matter, which might otherwise be a source of pestilence.

The diptera have only two wings, which are membranous and simply veined. A little behind the wings are two small slender organs called *Halteres*, poisers, or balancers. the use of which is not well known. They are usually present even in those exceptional insects of this order in which the wings are not developed. The head of the diptera is generally in great part occupied by the large compound eyes, which often contain thousands of facettes; and besides these, three simple or stematic eyes (ocelli) are often present, placed on the crown of the head. The mouth is formed exclusively for suction, and is usually furnished with a short membranous suctorial proboscis, composed of parts which represent, though so differently modified, the portions of the mouth in coleopterous and other masticating insects, some of the parts, however, often disappearing. The proboscis of many is capable of piercing the skins of animals on the juices of which they feed; others are destitute of this power of piercing. Many feed chiefly on saccharine and other vegetable juices. In some genera, the perfect, insect seems destitute of a mouth; and the term of life, after the perfect state has been attained, very brief in some, appears brief in all. The power which many dipterous insects possess of walking even on very smooth surfaces, in any position, even with the back downward, familiar in the common house-fly, has not yet received sufficient explanation. The opinion that their feet are furnished with disks for the formation of a vacuum, has been called in question, but nothing satis-

factory has been substituted for it. The terminal rings of the abdomen in the females of many species, form an ovipositor capable of piercing the substances in which the eggs are to be laid, and composed of pieces which may be exserted or retracted into one another like those of a telescope. The eggs are generally deposited in putrescent animal substances, but those of some kinds in the bodies of living animals, some in vegetable substances; the larvæ of some live in water; the eggs of a few are hatched within their own bodies, and the larvæ of some even remain there till they pass into the pupa state. All the diptera undergo a complete metamorphosis. Their larvæ are destitute of true feet, though some of them have organs which serve the same purpose; some have a distinct head; others have the head soft and changeable in form, capable of being retracted into the body, and distinguishable only by its position, and by the organs of the mouth. Those which dwell in water or in fluid putrescent matters, have a retractile tail-like prolongation of the body, terminated by a radiated expansion, which communicates with air-tubes, and constitutes part of a very remarkable respiratory system. The larvæ of some diptera spin cocoons when about to pass into the pupa state; in others, the skin of the larva hardens and encases the pupa; the perfect insect finally making its escape by forcing off with its head the end of its pupa case.

DIPTERACEÆ, *dĭp-tėr-ā′sē-ē*, or DIPTEROCARPACEÆ, *dĭp-tėr-ō-kâr-pā′sē-ē:* natural order of exogenous plants, consisting of beautiful and majestic trees, natives of the E. Indies. Some trees of this order, of which about 50 species are known, are highly valuable as timber trees. Among them is the SAL (q.v.), most esteemed timber-tree of India. They abound also in balsamic resin, and their resinous products are used for a variety of purposes. See ANIME; CAMPHOR; COPAL; DAMMAR; VARNISH TREE; SAL.—*Dipterocarpus*, the genus from which the above order has received its name, contains several species of the noblest trees of India. They abound in the warm parts of the e. coast of the Bay of Bengal and the E. Peninsula. The wood is used for house-building, ship-building, etc. *D. turbinatus*, the GURJUN or GOORJUN TREE, the species by which the genus first became known, often attains a height of upward of 200 ft., and a girth of 15 ft. It has a pale-gray trunk, rising without a branch till it forms at its summit a small symmetrical crown. The leaves are broad, glossy, and beautiful; the flowers in white racemes, but not conspicuous. The wood is hard, close-grained, and durable. A fragrant oil which exudes from the trunk is extremely valuable for pitch and varnish, and is also medicinal. It is procured by cutting transverse holes in the trunk, pointing downward, and lighting fires in them, which causes the oil to flow. The tree is called sometimes the WOOD-OIL TREE. This oil or balsam is procured also from other species of *Dipterocarpus*. *D. trinervis* yields a resin valuable for plasters, acting on the mucous mem-

branes like Balsam of Copaiva. The Javanese smear banana leaves with this resin, which then burn as torches, with a pleasant odor and white light.

DIPTERAL, a. *dĭp'tėr-ăl*, or DIP'TEROUS, a. *-ŭs* [Gr. *dis*, twice, double; *ptĕron*, a wing]: having two wings only; pertaining to the order of insects having two wings, called DIP'TERA, or DIP'TERANS, comprising the house-flies and their allies.

DIPTERUS, *dĭp'tėr-ŭs:* genus of fossil ganoid fishes, peculiar to the old red sandstone, in which two species have been found. They derive their name from their most striking characteristic—the double anal and dorsal fins, opposite each other. The head is large and flattened, the teeth subequal, the scales perforated by small foramina, and the tail heterocercal.

DIPTYCH, n. *dĭp'tĭk* [Gr. *diptŭcha*, a pair of tablets—from *diptŭchos*, folded, doubled]: a double writing tablet, or two writing tablets, which could be folded together. Herodotus speaks of such a tablet, made of wood and covered with wax. It was in the later Roman time, however, that they were most used, and those which have been preserved belong chiefly to the period when classical was merging into medieval life. The beautiful carving with which they are often covered on the outside, represents frequently a combination of classical and Christian subjects. Ivory and metal were sometimes used in place of wood; but the construction was always the same, the wax with the writing being in the inside. Under the emperors, diptychs were distinguished into consular and ecclesiastical. The former, presented by the consuls and other magistrates to their friends and those officially connected with them at their entrance on office, were inscribed with their names, and bore their portraits. The ecclesiastical diptychs were sometimes registers of bishops, saints, and martyrs, were decorated with scenes from sacred history, and preserved in the churches as part of the sacred ornaments. Those that exist are of various sizes, rarely exceeding eight inches by four.

DI'PUS: see JERBOA.

DIPYRE, n. *dĭ-pīr'* [Gr. *dis*. twice; *pur*, fire]: a mineral, so called from the double effect of fire upon it, by fusing it and rendering it slightly phosphorescent.

DIQUE, *dēk*, CANAL DEL, Columbia, an 'artificial arm' of the Magdalena River department of Bolivar. It is navigable by steamers, and is a means of communication between Cartagena and the interior; total length is about 74½ miles. In its course it passes through several swamps and receives the waters of various conduits, reaching the coast south of Cartagena.

DIRCA: see LEATHER-WOOD.

DIRCE, *dėr'sē*, in Greek legend, the second wife of Lycus, king of Thebes, who from jealousy imprisoned Antiope, whom Lycus had divorced in order to marry

herself; but Jupiter set Antiope at liberty, when she soon gave birth to two sons, Amphion and Zethus. These latter having grown up, put Lycus to death, and attached Dirce to the tail of a wild bull, which dragged her over the rocks, on which she was dashed to pieces. The gods, pitying her misfortunes, changed her into a spring, which bears her name and flows near Thebes.

DIRDUM, or DIRDAM: see DURDUM.

DIRE, a. *dīr* [L. *dīrus*, terrible, dreadful: It. *diro:* comp. Scot. *dour*, stern, severe: Gael. *daor*, doom]: dreadful; dismal; evil in a great degree; terrible; very calamitous. DIRE'FUL, a. *-fûl*, dreadful; terrible. DIRE'FULLY, ad. *-lĭ*. DIRE'FULNESS, n. DIRE'NESS, n.

DIRECT, a. *dĭ-rĕkt'* [F. *direct*—from L. *dīrectus*, made straight—from *dis*, intensive; *rectus*, straight: It. *diretto* comp. Gael. *dirich*, to straighten; *direach*, straight]: straight forward; not crooked or winding; straight; right; not circuitous; plain; open: N. a mark in music, to guide the performer from the last note of one stave to the first of another: V. to show the right road or course; to aim or point in a straight line; to regulate; to guide or lead; to order or instruct; to address, as a letter. DIREC'TING, imp. DIREC'TED, pp. DIRECT'LY, ad. *-lĭ*, in a straight course; without delay; immediately; openly; expressly. DIRECT'NESS, n. straightness. DIREC'TION, n. *-rĕk'shŭn* [F.—L.]: aim at a certain point; the line in which a body moves by force: a particular line or course; superintendence or management; guidance; order; instruction; the name, address, etc., on the cover of a letter; the board of directors or managers of a public company. DIREC'TIVE, a. *tiv*, that can direct. DIREC'TOR, n. a manager of a public company or institution. DIREC'TRESS, *-trĕs*, or DIRECTRIX, n. fem. *trĭks*, a woman who. DIREC'TORSHIP, n. the office. DIREC'TORATE, n. *-tėr-āt*, the office or body of directors. DIRECTO'RIAL, a. *-tō'rĭ-ăl*, pertaining to direction or command. DIREC'TORY, a. *tėr-ĭ*, guiding; instructing: N. a rule to direct; a guide; a book containing directions for public worship—usually applied to that drawn up by the Westminster Assembly of Divines, 1644; a book containing the names, addresses, etc., of the inhabitants of a place (as a city), arranged in alphabetical order; in *French hist.*, the name given in 1795–99 to the executive body of the French Republic. DIRECT RELATIONSHIP: see CONSANGUINITY.—SYN. of 'direct, v.': to conduct; superintend; administer; oversee; control; manage; dispose; instruct; command; order; regulate; aim; point; govern; address; superscribe;—of 'directly': promptly; instantly; soon; instantaneously; expressly; straightway.

DIRECT AND RET'ROGRADE: in *astronomy*, designating the motion of a planet, said to be direct when the planet goes forward by its proper motion in the zodiac according to the succession or order of the signs (i.e., from w. to e.), or when it appears to do so to an observer; said to be retrograde when it appears to move the contrary way.

DIRECTOR.

DIRECTOR: one of a number of persons appointed to conduct the affairs of joint-stock undertakings, such as banks, railways, water and gas companies, fire and life assurance companies, and various kinds of manufacturing and trading concerns. The office of a director is in all cases one of responsibility, sometimes of considerable risk, and according to commercial maxim, ought not to be accepted lightly or for the mere honor of the position. It is not business-like and it is not honest to accept the office without the distinct purpose to attend faithfully to all its duties. As a member of a body incorporated by the legislature, a railway director is bound to administer the affairs of the company only with the means legitimately put at his disposal, nor can he be expected to incur any personal liability to sustain the general operations. Usually, however, when there is any temporary or peculiar shortcoming in the finances, the directors overdraw, to a certain extent, the company's bank account on their personal responsibility; in all such cases, and where the outlay has been justifiable, the shareholders rarely decline to authorize measures which will relieve the directors of their obligations. In the case of banks, there are often two kinds of directors—the ordinary and the extraordinary. The ordinary directors are practically the conductors of the undertaking, while the extraordinary attend only on particular occasions, and are in fact, little else than ornamental appendages, whose names impart distinction to the concern. As regards bank as well as railway directors, it is the English rule that they must respectively possess a certain amount of stock; in the United States it is not generally required that a director be a shareholder, though directors almost always are such. It is an understanding that the directors of railways, banks, and assurance companies, should be paid in some way for their services. Being mostly men in business, they cannot be expected to give away their time and take trouble for nothing. Their payment, however, in the shape of an *honorarium*, is generally trifling in comparison to the labor. At meetings of shareholders, small sums are voted to be set aside for the directors, which sums are, for the most part, appropriated in the ratio of attendance. The insignificance of these fees cannot justify the view that a scrupulous examination into affairs is not reasonably to be expected; for it is clear there can be no valid excuse for neglecting a trust voluntarily accepted.

The difficult questions as to the cases in which directors incur liability for the losses sustained by the shareholders, have often been raised in courts of law. The trial and imprisonment in Scotland 1879 of the directors of the City of Glasgow Bank drew attention to this subject again. In the United States, directors causing loss to stockholders by neglect resulting in gross mismanagement, may generally be held personally liable. See JOINT-STOCK COMPANY. Laws in the different states vary, but some general principles of both English and American law, are: 1. That the first directors shall be selected, and their number determined, by the subscribers of the original memorandum of

association, who shall themselves be deemed directors until other directors are appointed. 2. That a director shall vacate his office by the acceptance of any other office or place of profit under the company, by bankruptcy or insolvency, or by being concerned in any contract with the company; but in the U. S., a director may be also a sec. or a managing agent. 3. At the first ordinary meeting after the incorporation of the company, all the directors shall retire from office; and at the first ordinary meeting in every subsequent year, one-third of the directors for the time being, or if their number is not a multiple of three, then the number nearest to one-third, shall retire from office. In every subsequent year, one-third, or other nearest number, who have been longest in office, shall retire. A retiring director shall be re-eligible. (On these details, as on some others here given, there are some variations in the statutes.) 4. The company in a general meeting may increase or diminish the number of directors. 5. Any casual vacancy occurring in the board of directors may be filled by the directors; but any person so chosen shall retain his office so long only as the vacating director would have retained the same if no vacancy had occurred. The company, in genera. meeting, may remove any director, and appoint another in his stead. 6. The directors may meet together for the dispatch of business, adjourn, and otherwise regulate their meetings as they think fit, and determine the quorum necessary for the transaction of business. 7. Questions arising are determined by a majority of votes, the chairman having a casting vote in case of equality. 8. A director may at any time summon a meeting of directors. 9. The directors elect their own chairman, and determine the period of his office. In case no chairman has been appointed, or he is absent, the directors shall appoint one of their number to preside for that time only. 10. Directors may delegate their powers to committees of such number as they may judge expedient. 11. The directors must cause minutes to be made in books provided for the purpose. These minutes shall set forth all appointments of officers made by the directors, the names of the directors present at each meeting of directors or of committee, all orders made by meetings or committees, and all resolutions and other proceedings of these bodies. These minutes shall be signed by the chairman, and shall be receivable in evidence of what took place without any further proof. 12. The directors, with the sanction of the company in a general meeting, may declare that a dividend shall be paid to the shareholders in proportion to their shares. No dividend shall be payable except out of the profits arising from the business of the company. 13. If the directors shall declare any dividend when the company is known by them to be insolvent, or any dividend the payment of which would, to their knowledge, render it insolvent, those of them taking part in such act shall be jointly and severally liable in the amount of the dividend declared, for the debts of the company then existing, and for all that shall be thereafter contracted, so long as they shall respectively remain in office.

Before recommending a dividend, the directors may set aside a reserved fund out of the profits of the company. Directors have a discretionary power to pass a customary dividend, for the good of the company, and the courts cannot interfere with their action, if it do not violate the charter. But the directors cannot take the company out of its regular business, nor can they sell its necessary property, nor wind up its business. In most states they cannot represent the company in any dealings with themselves, nor bind it to other parties in any contract in which they are interested In companies incorporated for carrying on undertakings of a public nature, such as railways, the appointment, rotation, and powers of directors, are often regulated by special statutes. See LIABILITY (LIMITED) ACTS: JOINT-STOCK COMPANIES.

DIRECTORY: executive body of the French republic, 1795–99. On the death of Robespierre, 1794, a reaction commenced in the Convention itself, as well as throughout all France, against the sanguinary excesses of the Terrorists. Ultimately a new constitution—that of the year 3 (1795)—gave birth to a new government, composed of a legislative body divided into two councils—the Council of Five Hundred, whose function was to propose laws; and the Council of the Ancients, whose function was to pass them. The actual executive power was intrusted to five members chosen from both sections, and who sat at the Luxembourg. Their names were Lépeaux, Letourneur, Rewbel, Barras, and Carnot. These five constituted the famous *Directory*. They assumed authority in a moment of immense peril. France was environed with gigantic adversaries, while distrust, discontent, and the malice of rival factions made her internal administration almost hopeless. The franctic heroism of her soldiers saved her from spoliation by the foreigner; and had all the members of the Directory been patriotic and honest, she might have been saved also from spoliation by her own children. But, on the contrary, the home policy of the Directory was deplorable. The demoralization which had begun to characterize officials even in Danton's time, now seized almost every class. Barras, representative of all the turpitude of the hour, set the example. The majority of the two Councils were equally corrupt; and though there were some both in the Councils and Directory whose virtues and talents were unimpeachable, they were too weak to counteract the knavery of their associates. It soon became clear that France could not be reconsolidated by the fag-ends of the Revolution. The power and skill requisite for such a herculean work were to be sought elsewhere, among men who had received a nobler discipline than could be obtained in the political squabbles of the metropolis. Such was the thought of the Abbé Sièyes. He turned his eyes to the army, where a host of new and brilliant names had appeared—Hoche, Joubert, Brune, Kleber, Desaix, Massena, Moreau, Bernadotte, Augereau, Bonaparte. Sièyes propounded his plan for the overthrow of the Directory, and the establishment of a consulate, that should be

in reality a monarchy under republican forms, first of all to Moreau, who was frightened by its audacity; then to Bernadotte, whose excessive caution hindered him from approving of it; then to Augereau, who could not understand it; finally to Bonaparte, on his return from Egypt. The last admired the project; a conspiracy was rapidly formed; all those functionaries who had been promised places by the Directory, but had not received them, offered their aid; and by the *coup d'état* of the 18th Brumaire (q.v.), an end was put to a government of weakness, immorality, and intrigue. It was succeeded by the Consulate (q.v.).

DIRECTORY FOR THE PUBLIC WORSHIP OF GOD: code of regulations concerning the different parts of public worship, drawn up by the Westminster Assembly 1644, ratified by the English parliament in the same year, and adopted by the general assembly of the Church of Scotland and by the Scottish parliament 1645. It was on express order from both houses of the English parliament, that the Westminster Assembly addressed itself to the work of preparing this Presb. Directory, to supply the place of the Book of Common Prayer, which had been abolished. In Scotland, it was hailed as conducive to 'a happy unity and uniformity in religion among the kirks of Christ in these three kingdoms, united under one sovereign,' and to 'the corroboration of peace and love between the kingdoms.' Many of the regulations of the Directory are still complied with in all branches of the Presbyterian Church in Scotland, but in many things it has been generally departed from; and a disposition prevails in almost all quarters to allow greater freedom and variety in the forms and unessential circumstances of worship; while many esteem a departure from the requirement of unnecessary *uniformity* in these things, as tending toward the healing as well as the prevention of divisions, and the establishment of a real *unity*.

DIRECTRIX, in Geometry: a line of reference employed in defining a curve as the locus of a moving point. If the distance of the point from the directrix is in a constant ratio to its distance from a fixed point (focus) the locus is a conic section. See ELLIPSE, HYPERBOLA, PARABOLA.

DIREFUL, DIREFULLY, DIREFULNESS: see under DIRE.

DIREMPTION, n. *dĭ-rĕm'shŭn* [L. *diremptus*, separation or division]: in *bot.*, the occasional separation or displacement of leaves.

DIRGE, n. *dėrj* [contraction of L. *dirĭgĕ*, direct or guide —in the clause *dirĭgĕ nos Domĭnĕ*, etc., guide us, O Lord: comp. Gael. *deurach*, mournful—from *deur*, a tear]: a song expressive of grief, sorrow, or mourning; a funeral hymn.

DIRIMENT IMPEDIMENT, *dĭr'ĭ-mĕnt ĭm-pĕd'ĭ-mĕnt* [L. *impĕdimentum dirĭmens*, a destroying impediment, *impĕdimenta dirĭmentĭă*, plu. forms: *impedimentum*, an imped-

iment; *dirimens*, destroying, dissolving]: in *Rom. Cath. Chh.*, an impediment that nullifies marriage.

DIRK, n. *dĕrk* [Scot. *durk;* Ir. *duirc*, a dirk: Ger. *dolch;* Sw. *dolk*, a dagger]: a short sword; a dagger; now worn by officers in some naval services, rather for ornament than for use.

DIRK-HARTOG ISLAND, *dĭrk-hâr'tŏg:* off the w. coast of Australia; lat. 26° s., and long. 113° e; 45 m. long, 10 m. wide. With two smaller islands to the north, all three having their lengths parallel with the mainland, it forms the breast-work of Shark's Bay, one of the most commodious inlets on that coast.

DIRSCHAU, *dēr'show:* town in the province of W. Prussia, govt. of Dantzic, Prussia, on the left bank of the Vistula river, on the railroad connecting Berlin with Dantzic, 20 m. s.s.e. of the latter city. It is noted for the great iron bridge over the river there, which was built 1850–57, is 2,843 ft. long, has 6 spans of 410 ft. each, and accommodates a double railroad track, and double carriage roads and foot passages. The town is protected by a heavy stone wall, manufactures leather, cement, agricultural implements, and beer, and holds five fairs annually. Pop. 12,000.

DIRT, n. *dĕrt* [AS. *dryt;* Icel. *drit*, excrement: Ger. and Dut. *dreck*, filth, mud: comp. Gael. *doirt*, to spill]: any foul or filthy thing; mud or earth; the matter which renders a thing unclean: V. to make foul or unclean. DIRT'ING, imp. DIRT'ED, pp. DIRTY, a. *dĕr'tĭ*, foul; nasty; not clean; base; mean: V. to make foul or filthy; to soil. DIR'TYING, imp. *-tĭ-ĭng*. DIR'TIED, pp. *-tĭd*. DIR'TILY, ad. *-tĭ-lĭ*. DIR'TINESS, n. *-nĕs*, foulness; nastiness. DIRT-EATING, *Cachexia Africana*, disease of the nutritive functions in which the patient is seized with an irresistible desire to eat dirt. Some tribes of African negroes are subject to this disease. DIRT-FLY, the yellow fly that frequents dung-hills, *Musca stercoraria*. DIRT-PIE, mud molded by children in imitation of pastry.

DIRT-BEDS, in Geology: quarrymen's name, now accepted as denoting several layers which, in the Isle of Portland, occur in the Lower Purbeck Beds (q.v.), having the appearance of black dirt. They rest on the fresh-water beds of the Lower Purbeck, and consist of one principal layer, 12 to 18 inches thick, and from two to four thinner layers. The substance is, to a large extent, a dark-brown or blackish earthy lignite, being the remains of an ancient vegetable soil. Through it are dispersed, in considerable abundance, rounded fragments of stones from three to nine inches in diameter. Fossil Cycads and Zamias are the predominant vegetable remains; they occupy their original upright position, having become fossil on the spots where they grew. The stumps stand erect for a height of from one to three, or even more ft., and at distances from each other similar to what may be observed in a recent forest. Besides these, the dirt-bed contains the silicified

stems of coniferous trees, laid prostrate in fragments three or four ft. in length. The marine oolitic limestone, called Portland stone, was overspread with fluviatile mud, which became the soil on which a forest of Cycads and Zamias grew, and that this was afterward submerged without any violent agitation, since the layer of black earth has not been abraded, and then was covered with standing fresh water, from which the beds of calcareous mud, now converted into slate, were deposited.

Dirt-bed (Isle of Portland);

a, fresh-water calcareous slate; *b*, dirt-bed with stools of trees; *c*, lowest fresh-water beds of the Lower Purbeck; *d*, Portland stone marine.

DIS, *dĭs*, [L. *dis;* Gr. *dis*, twice, in two parts; akin to Skr. *dwis*, twice]: a common prefix which, with its form Di and Dif, denotes, not; the opposite of; contrary state; asunder or apart; difference or dispersion; a parting from—sometimes *dis* simply acts as an intensive particle. Dis signifies two, as in *dis*-syllable. Dis in French becomes De and Des.

DI'SA, n.: genus of plants belonging to the *Orchidacea* or orchids. *D. grandiflora* is found on Table Mountain near Cape Town, Africa, at an elevation of 3,582 ft., the only known locality.

DISABIL'ITY, Legal: incapacity; either absolute, which wholly disables the person from doing any legal act —e.g., outlawry, excommunication, attainder, alienage; or partial, e.g., infancy, coverture, lunacy, drunkenness,. It may arise from the act of God, of the law, of the individual himself, or of his ancestor, or the person from whom he inherits.

DISABLE, v. *dĭs-ā'bl* [L. *dis*, not, and *able*]: to deprive of power; to render unable; to impair or destroy the strength of; to disqualify; in *OE.*, to impair or diminish. Disa'bling, imp. Disa'bled, pp. *-bld.* Dis'abil'ity, n. *-bĭl'ĭ-tĭ*, want of strength or ability; weakness; incapacity: Dis'abil'ities, n. plu. *-tĭz*, want of legal qualifications. Disa'blement, n. *-bl-mĕnt*, deprivation of power or ability. Disabling-statute, a statute passed in England to prevent bishops, deans, and chapters, colleges and other ecclesiastical and eleemosynary corporations, and all parsons and vicars, from making improvident leases which they were too often ready to do, in consideration of a premium paid to themselves, the interests of their successors being

disregarded. It was called also a Restraining statute.—Syn. of 'disability': inability; disqualification; incompetence or incompetency; impotence;—of 'disable': to weaken; unfit; incapacitate; undervalue.

DISABUSE, v. *dĭs'ă-būz'* [L. *dis*, not, and *abuse*: F. *dés-abuser*, to undeceive]: to set right; to free from mistake; to undeceive. Dis'abu'sing, imp. Dis'abused', pp. *-būzd'*.

DISADVANTAGE, n. *dĭs'ăd-vân'tāj* [L. *dis*, not, and *advantage*]: state not prepared for defense; unfavorable condition or circumstances; that which hinders or retards success; loss; injury; hurt: V. to injure in interest; to prejudice. Dis'advan'taged, a. *-tājd*, injured in interest. Dis'advanta'geous, a. *-tā'jŭs*, unfavorable to success or prosperity; not adapted to promote interest or good. Dis'advanta'geously, ad. *-lĭ*. Dis'advanta'geousness, n. *-jŭs-nĕs*, the state of being unfavorable to success; loss.—Syn. of 'disadvantage': detriment; damage; hurt; prejudice.

DISAFFECT, v. *dĭs'ăf-fĕkt'* [L. *dis*, not, and *affect*]: to make not well affected to; to make less faithful or friendly to; to alienate affection; to fill with discontent; in *OE.*, to dislike; to disorder. Dis'affec'ting, imp. Dis'affec'ted, pp.: Adj. not disposed to favor or support; unfriendly. Dis'affec'tedly, ad. *-lĭ*. Dis'affec'tedness, n. Dis'affec'tion, n. *-fĕk'shŭn*, want of attachment or goodwill; unfriendliness; enmity.—Syn. of 'disaffection': disloyalty; hostility; alienation; ill-will; dislike; disgust.

DISAFFIRM, v. *dĭs'ăf-fĕrm'* [L. *dis*, not, and *affirm*]: to contradict; to deny; to annul, as a judicial decision. Dis'affirm'ance, n. *-fĕrm'ăns*, denial; negation; confutation.

DISAFFOREST: see Deforest.

DISAGREE, v. *dĭs'ă-grē'* [L. *dis*, not, and *agree*]: not to agree; to differ; to be not the same; to be unsuitable —Dis'agree'ing, imp. Dis'agreed', pp. *-grēd'*. Dis'agree'ment, n. difference of opinion or sentiment; unsuitableness. Dis'agree'able, a. *-ă-bl*, not pleasant; offensive. Dis'agree'ably, ad. *-blĭ*. Dis'agree'ableness, n. *-bl-nĕs*, the state of unpleasantness.—Syn. of 'disagree': to dissent; vary;—of 'disagreement': dissent; difference; variance; diversity; dissimilitude; discrepancy, unlikeness; dissension; misunderstanding; dispute; division; discord; wrangle; jar; unadaptedness; controversy.

DISALLOW, v. *dĭs'ăl-low'* [L. *dis*, not, and *allow*]: not to permit or grant; to reject as untrue or unjust. Dis'allow'ing, imp. Dis'allowed', pp. *-lowd'*. Dis'allow'able, a. *-low'ă-bl*, not allowable; not to be suffered. Dis'allow'ance, n. *-ăns*, refusal to admit or permit; rejection. —Syn. of 'disallow': to condemn; reject; disapprove; prohibit; censure; disown.

DISALLY, v. *dĭs'ăl-lī'* [L. *dis*, not, and *ally*]: in *OE.*, to disjoin; to sever. Dis'ally'ing, imp. Disallied, pp. *dĭs'ăl-līd'*.

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